

# SEQUENCE LISTING

<110> Regents of the University of Minnesota, et al.

5 <120> DNA encoding methymycin and pikromycin

<130> 600.438WO1

10 <150> US 09/105,537

<151> 1998-06-26

<160> 53

15 <170> FastSEQ for Windows Version 3.0

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<211> 15872

<212> DNA

20 <213> Streptomyces venezuelae

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40	cggccgcctt	ccacggcgac	ctgatcgaaa	tggtcaagag	caaccgcgtg	acccgccccg	15420

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10

&lt;210&gt; 2

&lt;211&gt; 5215

&lt;212&gt; PRT

15

&lt;213&gt; Streptomyces venezuelae

&lt;400&gt; 2

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Met Asn Glu Ala Ile Ala Val Val Gly Met Ser Cys Arg Leu Pro Lys
  1             5             10             15
20Ala Ser Asn Pro Ala Ala Phe Trp Glu Leu Leu Arg Asn Gly Glu Ser
      20             25             30
Ala Val Thr Asp Val Pro Ser Gly Arg Trp Thr Ser Val Leu Gly Gly
      35             40             45
Ala Asp Ala Glu Glu Pro Ala Glu Ser Gly Val Arg Arg Gly Gly Phe
25  50             55             60
Leu Asp Ser Leu Asp Leu Phe Asp Ala Ala Phe Phe Gly Ile Ser Pro
65             70             75             80
Arg Glu Ala Ala Ala Met Asp Pro Gln Gln Arg Leu Val Leu Glu Leu
      85             90             95
30Ala Trp Glu Ala Leu Glu Asp Ala Gly Ile Val Pro Gly Thr Leu Ala
      100            105            110
Gly Ser Arg Thr Ala Val Phe Val Gly Thr Leu Arg Asp Asp Tyr Thr
      115            120            125
Ser Leu Leu Tyr Gln His Gly Glu Gln Ala Ile Thr Gln His Thr Met
35  130            135            140
Ala Gly Val Asn Arg Gly Val Ile Ala Asn Arg Val Ser Tyr His Leu
145            150            155            160
Gly Leu Gln Gly Pro Ser Leu Thr Val Asp Ala Ala Gln Ser Ser Ser
      165            170            175
40Leu Val Ala Val His Leu Ala Cys Glu Ser Leu Arg Ala Gly Glu Ser

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T06TT 4888660



	180		185		190
	Thr Thr Ala Leu Val Ala Gly Val Asn Leu Asn Ile Leu Ala Glu Ser				
	195		200		205
	Ala Val Thr Glu Glu Arg Phe Gly Gly Leu Ser Pro Asp Gly Thr Ala				
5	210		215		220
	Tyr Thr Phe Asp Ala Arg Ala Asn Gly Phe Val Arg Gly Glu Gly Gly				
	225		230		235
	Gly Val Val Val Leu Lys Pro Leu Ser Arg Ala Leu Ala Asp Gly Asp				
		245		250	
10	Arg Val His Gly Val Ile Arg Ala Ser Ala Val Asn Asn Asp Gly Ala				
		260		265	
	Thr Pro Gly Leu Thr Val Pro Ser Arg Ala Ala Gln Glu Lys Val Leu				
		275		280	
	Arg Glu Ala Tyr Arg Lys Ala Ala Leu Asp Pro Ser Ala Val Gln Tyr				
15	290		295		300
	Val Glu Leu His Gly Thr Gly Thr Pro Val Gly Asp Pro Ile Glu Ala				
	305		310		315
	Ala Ala Leu Gly Ala Val Leu Gly Ser Ala Arg Pro Ala Asp Glu Pro				
		325		330	
20	Leu Leu Val Gly Ser Ala Lys Thr Asn Val Gly His Leu Glu Gly Ala				
		340		345	
	Ala Gly Ile Val Gly Leu Ile Lys Thr Leu Leu Ala Leu Gly Arg Arg				
		355		360	
	Arg Ile Pro Ala Ser Leu Asn Phe Arg Thr Pro His Pro Asp Ile Pro				
25	370		375		380
	Leu Asp Thr Leu Gly Leu Asp Val Pro Asp Gly Leu Arg Glu Trp Pro				
	385		390		395
	His Pro Asp Arg Glu Leu Leu Ala Gly Val Ser Ser Phe Gly Met Gly				
		405		410	
30	Gly Thr Asn Ala His Val Val Leu Ser Glu Gly Pro Ala Gln Gly Gly				
		420		425	
	Glu Gln Pro Gly Ile Asp Glu Glu Thr Pro Val Asp Ser Gly Ala Ala				
		435		440	
	Leu Pro Phe Val Val Thr Gly Arg Gly Gly Glu Ala Leu Arg Ala Gln				
35	450		455		460
	Ala Arg Arg Leu His Glu Ala Val Glu Ala Asp Pro Glu Leu Ala Pro				
	465		470		475
	Ala Ala Leu Ala Arg Ser Leu Val Thr Thr Arg Thr Val Phe Thr His				
		485		490	
40	Arg Ser Val Val Leu Ala Pro Asp Arg Ala Arg Leu Leu Asp Gly Leu				

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	500		505		510
	Gly Ala Leu Ala Ala Gly Thr Pro Ala Pro Gly Val Val Thr Gly Thr				
	515		520		525
	Pro Ala Pro Gly Arg Leu Ala Val Leu Phe Ser Gly Gln Gly Ala Gln				
5	530		535		540
	Arg Thr Gly Met Gly Met Glu Leu Tyr Ala Ala His Pro Ala Phe Ala				
	545		550		555
	Thr Ala Phe Asp Ala Val Ala Ala Glu Leu Asp Pro Leu Leu Asp Arg				
	565		570		575
10	Pro Leu Ala Glu Leu Val Ala Ala Gly Asp Thr Leu Asp Arg Thr Val				
	580		585		590
	His Thr Gln Pro Ala Leu Phe Ala Val Glu Val Ala Leu His Arg Leu				
	595		600		605
	Val Glu Ser Trp Gly Val Thr Pro Asp Leu Leu Ala Gly His Ser Val				
15	610		615		620
	Gly Glu Ile Ser Ala Ala His Val Ala Gly Val Leu Ser Leu Arg Asp				
	625		630		635
	Ala Ala Arg Leu Val Ala Ala Arg Gly Arg Leu Met Gln Ala Leu Pro				
	645		650		655
20	Glu Gly Gly Ala Met Val Ala Val Glu Ala Ser Glu Glu Glu Val Leu				
	660		665		670
	Pro His Leu Ala Gly Arg Glu Arg Glu Leu Ser Leu Ala Ala Val Asn				
	675		680		685
	Gly Pro Arg Ala Val Val Leu Ala Gly Ala Glu Arg Ala Val Leu Asp				
25	690		695		700
	Val Ala Glu Leu Leu Arg Glu Gln Gly Arg Arg Thr Lys Arg Leu Ser				
	705		710		715
	Val Ser His Ala Phe His Ser Pro Leu Met Glu Pro Met Leu Asp Asp				
	725		730		735
30	Phe Arg Arg Val Val Glu Glu Leu Asp Phe Gln Glu Pro Arg Val Asp				
	740		745		750
	Val Val Ser Thr Val Thr Gly Leu Pro Val Thr Ala Gly Gln Trp Thr				
	755		760		765
	Asp Pro Glu Tyr Trp Val Asp Gln Val Arg Arg Pro Val Arg Phe Leu				
35	770		775		780
	Asp Ala Val Arg Thr Leu Glu Glu Ser Gly Ala Asp Thr Phe Leu Glu				
	785		790		795
	Leu Gly Pro Asp Gly Val Cys Ser Ala Met Ala Ala Asp Ser Val Arg				
	805		810		815
40	Asp Gln Glu Ala Ala Thr Ala Val Ser Ala Leu Arg Lys Gly Arg Pro				

1983-1984

	820		825		830
	Glu Pro Gln Ser Leu Leu Ala Ala Leu Thr Thr Val Phe Val Arg Gly				
	835		840		845
	His Asp Val Asp Trp Thr Ala Ala His Gly Ser Thr Gly Thr Val Arg				
5	850		855		860
	Val Pro Leu Pro Thr Tyr Ala Phe Gln Arg Glu Arg His Trp Phe Asp				
	865		870		875
	Gly Ala Ala Arg Thr Ala Ala Pro Leu Thr Ala Gly Arg Ser Gly Thr				
	885		890		895
10	Gly Ala Gly Thr Gly Pro Ala Ala Gly Val Thr Ser Gly Glu Gly Glu				
	900		905		910
	Gly Glu Gly Glu Gly Ala Gly Ala Gly Gly Gly Asp Arg Pro Ala Arg				
	915		920		925
	His Glu Thr Thr Glu Arg Val Arg Ala His Val Ala Ala Val Leu Glu				
15	930		935		940
	Tyr Asp Asp Pro Thr Arg Val Glu Leu Gly Leu Thr Phe Lys Glu Leu				
	945		950		955
	Gly Phe Asp Ser Leu Met Ser Val Glu Leu Arg Asn Ala Leu Val Asp				
	965		970		975
20	Asp Thr Gly Leu Arg Leu Pro Ser Gly Leu Leu Phe Asp His Pro Thr				
	980		985		990
	Pro Arg Ala Leu Ala Ala His Leu Gly Asp Leu Leu Thr Gly Gly Ser				
	995		1000		1005
	Gly Glu Thr Gly Ser Ala Asp Gly Ile Pro Pro Ala Thr Pro Ala Asp				
25	1010		1015		1020
	Thr Thr Ala Glu Pro Ile Ala Ile Ile Gly Met Ala Cys Arg Tyr Pro				
	1025		1030		1035
	Gly Gly Val Thr Ser Pro Glu Asp Leu Trp Arg Leu Val Ala Glu Gly				
	1045		1050		1055
30	Arg Asp Ala Val Ser Gly Leu Pro Thr Asp Arg Gly Trp Asp Glu Asp				
	1060		1065		1070
	Leu Phe Asp Ala Asp Pro Asp Arg Ser Gly Lys Ser Ser Val Arg Glu				
	1075		1080		1085
	Gly Gly Phe Leu His Asp Ala Ala Leu Phe Asp Ala Gly Phe Phe Gly				
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	Ile Ser Pro Arg Glu Ala Leu Gly Met Asp Pro Gln Gln Arg Leu Leu				
	1105		1110		1115
	Leu Glu Thr Ala Trp Glu Ala Val Glu Arg Ala Gly Leu Asp Pro Glu				
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40	Gly Leu Lys Gly Ser Arg Thr Ala Val Phe Val Gly Ala Thr Ala Leu				

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	1795	1800	1805
	Ser Gly Glu Leu Thr Ser Pro Ala Tyr Trp Val Asp Gln Ile Arg Arg		
5	1810	1815	1820
	Pro Val Arg Phe Leu Asp Ala Val Arg Thr Leu Ala Ala Gln Asp Ala		
	1825	1830	1835
	Thr Val Leu Val Glu Ile Gly Pro Asp Ala Val Leu Thr Ala Leu Ala		
	1845	1850	1855
10	Glu Glu Ala Leu Ala Pro Gly Thr Asp Ala Pro Asp Ala Arg Asp Val		
	1860	1865	1870
	Thr Val Val Pro Leu Leu Arg Ala Gly Arg Pro Glu Pro Glu Thr Leu		
	1875	1880	1885
	Ala Ala Gly Leu Ala Thr Ala His Val His Gly Ala Pro Leu Asp Arg		
15	1890	1895	1900
	Ala Ser Phe Phe Pro Asp Gly Arg Arg Thr Asp Leu Pro Thr Tyr Ala		
	1905	1910	1915
	Phe Arg Arg Glu His Tyr Trp Leu Thr Pro Glu Ala Arg Thr Asp Ala		
	1925	1930	1935
20	Arg Ala Leu Gly Phe Asp Pro Ala Arg His Pro Leu Leu Thr Thr Thr		
	1940	1945	1950
	Val Glu Val Ala Gly Gly Asp Gly Val Leu Leu Thr Gly Arg Leu Ser		
	1955	1960	1965
	Leu Thr Asp Gln Pro Trp Leu Ala Asp His Met Val Asn Gly Ala Val		
25	1970	1975	1980
	Leu Leu Pro Ala Thr Ala Phe Leu Glu Leu Ala Leu Ala Ala Gly Asp		
	1985	1990	1995
	His Val Gly Ala Val Arg Val Glu Glu Leu Thr Leu Glu Ala Pro Leu		
	2005	2010	2015
30	Val Leu Pro Glu Arg Gly Ala Val Arg Ile Gln Val Gly Val Ser Gly		
	2020	2025	2030
	Asp Gly Glu Ser Pro Ala Gly Arg Thr Phe Gly Val Tyr Ser Thr Pro		
	2035	2040	2045
	Asp Ser Gly Asp Thr Gly Asp Asp Ala Pro Arg Glu Trp Thr Arg His		
35	2050	2055	2060
	Val Ser Gly Val Leu Gly Glu Gly Asp Pro Ala Thr Glu Ser Asp His		
	2065	2070	2075
	Pro Gly Thr Asp Gly Asp Gly Ser Ala Ala Trp Pro Pro Ala Ala Ala		
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40	Thr Ala Thr Pro Leu Asp Gly Val Tyr Asp Arg Leu Ala Glu Leu Gly		

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T06TTT-18288660

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	Gly Ala Asp Thr Leu Ala Glu Ile Arg Leu Pro Ala Ala Gln His Glu		
5	2130	2135	2140
	Ser Ala Gly Leu Phe Gly Val His Pro Ala Leu Leu Asp Ala Ala Leu		
	2145	2150	2155 2160
	His Pro Ile Val Leu Glu Gly Asn Ser Ala Ala Gly Ala Cys Asp Ala		
	2165	2170	2175
10	Asp Thr Asp Ala Thr Asp Arg Ile Arg Leu Pro Phe Ala Trp Ala Gly		
	2180	2185	2190
	Val Thr Leu His Ala Glu Gly Ala Thr Ala Leu Arg Val Arg Ile Thr		
	2195	2200	2205
	Pro Thr Gly Pro Asp Thr Val Thr Leu Arg Leu Thr Asp Thr Thr Gly		
15	2210	2215	2220
	Ala Pro Val Ala Thr Val Glu Ser Leu Thr Leu Arg Ala Val Ala Lys		
	2225	2230	2235 2240
	Asp Arg Leu Gly Thr Thr Ala Gly Arg Val Asp Asp Ala Leu Phe Thr		
	2245	2250	2255
20	Val Val Trp Thr Glu Thr Gly Thr Pro Glu Pro Ala Gly Arg Gly Ala		
	2260	2265	2270
	Val Glu Val Glu Glu Leu Val Asp Leu Ala Gly Leu Gly Asp Leu Val		
	2275	2280	2285
	Glu Leu Gly Ala Ala Asp Val Val Leu Arg Ala Asp Arg Trp Thr Leu		
25	2290	2295	2300
	Asp Gly Asp Pro Ser Ala Ala Ala Arg Thr Ala Val Arg Arg Thr Leu		
	2305	2310	2315 2320
	Ala Ile Val Gln Glu Phe Leu Ser Glu Pro Arg Phe Asp Gly Ser Arg		
	2325	2330	2335
30	Leu Val Cys Val Thr Arg Gly Ala Val Ala Ala Leu Pro Gly Glu Asp		
	2340	2345	2350
	Val Thr Ser Leu Ala Thr Gly Pro Leu Trp Gly Leu Val Arg Ser Ala		
	2355	2360	2365
	Gln Ser Glu Asn Pro Gly Arg Leu Phe Leu Leu Asp Leu Gly Glu Gly		
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	Glu Gly Glu Arg Asp Gly Ala Glu Glu Leu Ile Arg Ala Ala Thr Ala		
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	Gly Asp Glu Pro Gln Leu Ala Ala Arg Asp Gly Arg Leu Leu Ala Pro		
	2405	2410	2415
40	Arg Leu Ala Arg Thr Ala Ala Leu Ser Ser Glu Asp Thr Ala Gly Gly		

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	Ile Ala Ala Ala Tyr Val Ala Gly Ala Leu Thr Leu Asp Asp Ala Ala		
	5940	5945	5950
	Arg Val Val Thr Leu Arg Ser Lys Ser Ile Ala Ala His Leu Ala Gly		
5	5955	5960	5965
	Lys Gly Gly Met Ile Ser Leu Ala Leu Ser Glu Glu Ala Thr Arg Gln		
	5970	5975	5980
	Arg Ile Glu Asn Leu His Gly Leu Ser Ile Ala Ala Val Asn Gly Pro		
	5985	5990	5995
10	Thr Ala Thr Val Val Ser Gly Asp Pro Thr Gln Ile Gln Glu Leu Ala		6000
	6005	6010	6015
	Gln Ala Cys Glu Ala Asp Gly Val Arg Ala Arg Ile Ile Pro Val Asp		
	6020	6025	6030
	Tyr Ala Ser His Ser Ala His Val Glu Thr Ile Glu Ser Glu Leu Ala		
15	6035	6040	6045
	Glu Val Leu Ala Gly Leu Ser Pro Arg Thr Pro Glu Val Pro Phe Phe		
	6050	6055	6060
	Ser Thr Leu Glu Gly Ala Trp Ile Thr Glu Pro Val Leu Asp Gly Thr		
	6065	6070	6075
20	Tyr Trp Tyr Arg Asn Leu Arg His Arg Val Gly Phe Ala Pro Ala Val		6080
	6085	6090	6095
	Glu Thr Leu Ala Thr Asp Glu Gly Phe Thr His Phe Ile Glu Val Ser		
	6100	6105	6110
	Ala His Pro Val Leu Thr Met Thr Leu Pro Glu Thr Val Thr Gly Leu		
25	6115	6120	6125
	Gly Thr Leu Arg Arg Glu Gln Gly Gly Gln Glu Arg Leu Val Thr Ser		
	6130	6135	6140
	Leu Ala Glu Ala Trp Thr Asn Gly Leu Thr Ile Asp Trp Ala Pro Val		
	6145	6150	6155
30	Leu Pro Thr Ala Thr Gly His His Pro Glu Leu Pro Thr Tyr Ala Phe		6160
	6165	6170	6175
	Gln Arg Arg His Tyr Trp Leu His Asp Ser Pro Ala Val Gln Gly Ser		
	6180	6185	6190
	Val Gln Asp Ser Trp Arg Tyr Arg Ile Asp Trp Lys Arg Leu Ala Val		
35	6195	6200	6205
	Ala Asp Ala Ser Glu Arg Ala Gly Leu Ser Gly Arg Trp Leu Val Val		
	6210	6215	6220
	Val Pro Glu Asp Arg Ser Ala Glu Ala Ala Pro Val Leu Ala Ala Leu		
	6225	6230	6235
40	Ser Gly Ala Gly Ala Asp Pro Val Gln Leu Asp Val Ser Pro Leu Gly		6240

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	6260	6265	6270
	Gly Gly Ala Val Asp Gly Val Leu Ser Leu Leu Ala Trp Asp Glu Ser		
5	6275	6280	6285
	Ala His Pro Gly His Pro Ala Pro Phe Thr Arg Gly Thr Gly Ala Thr		
	6290	6295	6300
	Leu Thr Leu Val Gln Ala Leu Glu Asp Ala Gly Val Ala Ala Pro Leu		
	6305	6310	6315
10	Trp Cys Val Thr His Gly Ala Val Ser Val Gly Arg Ala Asp His Val		6320
	6325	6330	6335
	Thr Ser Pro Ala Gln Ala Met Val Trp Gly Met Gly Arg Val Ala Ala		
	6340	6345	6350
	Leu Glu His Pro Glu Arg Trp Gly Gly Leu Ile Asp Leu Pro Ser Asp		
15	6355	6360	6365
	Ala Asp Arg Ala Ala Leu Asp Arg Met Thr Thr Val Leu Ala Gly Gly		
	6370	6375	6380
	Thr Gly Glu Asp Gln Val Ala Val Arg Ala Ser Gly Leu Leu Ala Arg		
	6385	6390	6395
20	Arg Leu Val Arg Ala Ser Leu Pro Ala His Gly Thr Ala Ser Pro Trp		6400
	6405	6410	6415
	Trp Gln Ala Asp Gly Thr Val Leu Val Thr Gly Ala Glu Glu Pro Ala		
	6420	6425	6430
	Ala Ala Glu Ala Ala Arg Arg Leu Ala Arg Asp Gly Ala Gly His Leu		
25	6435	6440	6445
	Leu Leu His Thr Thr Pro Ser Gly Ser Glu Gly Ala Glu Gly Thr Ser		
	6450	6455	6460
	Gly Ala Ala Glu Asp Ser Gly Leu Ala Gly Leu Val Ala Glu Leu Ala		
	6465	6470	6475
30	Asp Leu Gly Ala Thr Ala Thr Val Val Thr Cys Asp Leu Thr Asp Ala		6480
	6485	6490	6495
	Glu Ala Ala Ala Arg Leu Leu Ala Gly Val Ser Asp Ala His Pro Leu		
	6500	6505	6510
	Ser Ala Val Leu His Leu Pro Pro Thr Val Asp Ser Glu Pro Leu Ala		
35	6515	6520	6525
	Ala Thr Asp Ala Asp Ala Leu Ala Arg Val Val Thr Ala Lys Ala Thr		
	6530	6535	6540
	Ala Ala Leu His Leu Asp Arg Leu Leu Arg Glu Ala Ala Ala Ala Gly		
	6545	6550	6555
40	Gly Arg Pro Pro Val Leu Val Leu Phe Ser Ser Val Ala Ala Ile Trp		6560

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	6565	6570	6575
	Gly Gly Ala Gly Gln Gly Ala Tyr Ala Ala Gly Thr Ala Phe Leu Asp		
	6580	6585	6590
	Ala Leu Ala Gly Gln His Arg Ala Asp Gly Pro Thr Val Thr Ser Val		
5	6595	6600	6605
	Ala Trp Ser Pro Trp Glu Gly Ser Arg Val Thr Glu Gly Ala Thr Gly		
	6610	6615	6620
	Glu Arg Leu Arg Arg Leu Gly Leu Arg Pro Leu Ala Pro Ala Thr Ala		
	6625	6630	6635
10	Leu Thr Ala Leu Asp Thr Ala Leu Gly His Gly Asp Thr Ala Val Thr		
	6645	6650	6655
	Ile Ala Asp Val Asp Trp Ser Ser Phe Ala Pro Gly Phe Thr Thr Ala		
	6660	6665	6670
	Arg Pro Gly Thr Leu Leu Ala Asp Leu Pro Glu Ala Arg Arg Ala Leu		
15	6675	6680	6685
	Asp Glu Gln Gln Ser Thr Thr Ala Ala Asp Asp Thr Val Leu Ser Arg		
	6690	6695	6700
	Glu Leu Gly Ala Leu Thr Gly Ala Glu Gln Gln Arg Arg Met Gln Glu		
	6705	6710	6715
20	Leu Val Arg Glu His Leu Ala Val Val Leu Asn His Pro Ser Pro Glu		
	6725	6730	6735
	Ala Val Asp Thr Gly Arg Ala Phe Arg Asp Leu Gly Phe Asp Ser Leu		
	6740	6745	6750
	Thr Ala Val Glu Leu Arg Asn Arg Leu Lys Asn Ala Thr Gly Leu Ala		
25	6755	6760	6765
	Leu Pro Ala Thr Leu Val Phe Asp Tyr Pro Thr Pro Arg Thr Leu Ala		
	6770	6775	6780
	Glu Phe Leu Leu Ala Glu Ile Leu Gly Glu Gln Ala Gly Ala Gly Glu		
	6785	6790	6795
30	Gln Leu Pro Val Asp Gly Gly Val Asp Asp Glu Pro Val Ala Ile Val		
	6805	6810	6815
	Gly Met Ala Cys Arg Leu Pro Gly Gly Val Ala Ser Pro Glu Asp Leu		
	6820	6825	6830
	Trp Arg Leu Val Ala Gly Gly Glu Asp Ala Ile Ser Gly Phe Pro Gln		
35	6835	6840	6845
	Asp Arg Gly Trp Asp Val Glu Gly Leu Tyr Asp Pro Asp Pro Asp Ala		
	6850	6855	6860
	Ser Gly Arg Thr Tyr Cys Arg Ala Gly Gly Phe Leu Asp Glu Ala Gly		
	6865	6870	6875
40	Glu Phe Asp Ala Asp Phe Phe Gly Ile Ser Pro Arg Glu Ala Leu Ala		6880

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	6885	6890	6895
	Met Asp Pro Gln Gln Arg Leu Leu Leu Glu Thr Ser Trp Glu Ala Val		
	6900	6905	6910
	Glu Asp Ala Gly Ile Asp Pro Thr Ser Leu Gln Gly Gln Gln Val Gly		
5	6915	6920	6925
	Val Phe Ala Gly Thr Asn Gly Pro His Tyr Glu Pro Leu Leu Arg Asn		
	6930	6935	6940
	Thr Ala Glu Asp Leu Glu Gly Tyr Val Gly Thr Gly Asn Ala Ala Ser		
	6945	6950	6955
			6960
10	Ile Met Ser Gly Arg Val Ser Tyr Thr Leu Gly Leu Glu Gly Pro Ala		
	6965	6970	6975
	Val Thr Val Asp Thr Ala Cys Ser Ser Ser Leu Val Ala Leu His Leu		
	6980	6985	6990
	Ala Val Gln Ala Leu Arg Lys Gly Glu Cys Gly Leu Ala Leu Ala Gly		
15	6995	7000	7005
	Gly Val Thr Val Met Ser Thr Pro Thr Thr Phe Val Glu Phe Ser Arg		
	7010	7015	7020
	Gln Arg Gly Leu Ala Glu Asp Gly Arg Ser Lys Ala Phe Ala Ala Ser		
	7025	7030	7035
			7040
20	Ala Asp Gly Phe Gly Pro Ala Glu Gly Val Gly Met Leu Leu Val Glu		
	7045	7050	7055
	Arg Leu Ser Asp Ala Arg Arg Asn Gly His Arg Val Leu Ala Val Val		
	7060	7065	7070
	Arg Gly Ser Ala Val Asn Gln Asp Gly Ala Ser Asn Gly Leu Thr Ala		
25	7075	7080	7085
	Pro Asn Gly Pro Ser Gln Gln Arg Val Ile Arg Arg Ala Leu Ala Asp		
	7090	7095	7100
	Ala Arg Leu Thr Thr Ala Asp Val Asp Val Val Glu Ala His Gly Thr		
	7105	7110	7115
			7120
30	Gly Thr Arg Leu Gly Asp Pro Ile Glu Ala Gln Ala Leu Ile Ala Thr		
	7125	7130	7135
	Tyr Gly Gln Gly Arg Asp Thr Glu Gln Pro Leu Arg Leu Gly Ser Leu		
	7140	7145	7150
	Lys Ser Asn Ile Gly His Thr Gln Ala Ala Ala Gly Val Ser Gly Ile		
35	7155	7160	7165
	Ile Lys Met Val Gln Ala Met Arg His Gly Val Leu Pro Lys Thr Leu		
	7170	7175	7180
	His Val Asp Arg Pro Ser Asp Gln Ile Asp Trp Ser Ala Gly Thr Val		
	7185	7190	7195
			7200
40	Glu Leu Leu Thr Glu Ala Met Asp Trp Pro Arg Lys Gln Glu Gly Gly		

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	7205	7210	7215
	Leu Arg Arg Ala Ala Val Ser Ser Phe Gly Ile Ser Gly Thr Asn Ala		
	7220	7225	7230
	His Ile Val Leu Glu Glu Ala Pro Val Asp Glu Asp Ala Pro Ala Asp		
5	7235	7240	7245
	Glu Pro Ser Val Gly Gly Val Val Pro Trp Leu Val Ser Ala Lys Thr		
	7250	7255	7260
	Pro Ala Ala Leu Asp Ala Gln Ile Gly Arg Leu Ala Ala Phe Ala Ser		
	7265	7270	7275
10	Gln Gly Arg Thr Asp Ala Ala Asp Pro Gly Ala Val Ala Arg Val Leu		7280
	7285	7290	7295
	Ala Gly Gly Arg Ala Gln Phe Glu His Arg Ala Val Ala Leu Gly Thr		
	7300	7305	7310
	Gly Gln Asp Asp Leu Ala Ala Ala Leu Ala Ala Pro Glu Gly Leu Val		
15	7315	7320	7325
	Arg Gly Val Ala Ser Gly Val Gly Arg Val Ala Phe Val Phe Pro Gly		
	7330	7335	7340
	Gln Gly Thr Gln Trp Ala Gly Met Gly Ala Glu Leu Leu Asp Val Ser		
	7345	7350	7355
20	Lys Glu Phe Ala Ala Ala Met Ala Glu Cys Glu Ala Ala Leu Ala Pro		7360
	7365	7370	7375
	Tyr Val Asp Trp Ser Leu Glu Ala Val Val Arg Gln Ala Pro Gly Ala		
	7380	7385	7390
	Pro Thr Leu Glu Arg Val Asp Val Val Gln Pro Val Thr Phe Ala Val		
25	7395	7400	7405
	Met Val Ser Leu Ala Lys Val Trp Gln His His Gly Val Thr Pro Gln		
	7410	7415	7420
	Ala Val Val Gly His Ser Gln Gly Glu Ile Ala Ala Ala Tyr Val Ala		
	7425	7430	7435
30	Gly Ala Leu Ser Leu Asp Asp Ala Ala Arg Val Val Thr Leu Arg Ser		7440
	7445	7450	7455
	Lys Ser Ile Gly Ala His Leu Ala Gly Gln Gly Gly Met Leu Ser Leu		
	7460	7465	7470
	Ala Leu Ser Glu Ala Ala Val Val Glu Arg Leu Ala Gly Phe Asp Gly		
35	7475	7480	7485
	Leu Ser Val Ala Ala Val Asn Gly Pro Thr Ala Thr Val Val Ser Gly		
	7490	7495	7500
	Asp Pro Thr Gln Ile Gln Glu Leu Ala Gln Ala Cys Glu Ala Asp Gly		
	7505	7510	7515
40	Val Arg Ala Arg Ile Ile Pro Val Asp Tyr Ala Ser His Ser Ala His		7520

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	7525	7530	7535
	Val Glu Thr Ile Glu Ser Glu Leu Ala Asp Val Leu Ala Gly Leu Ser		
	7540	7545	7550
	Pro Gln Thr Pro Gln Val Pro Phe Phe Ser Thr Leu Glu Gly Ala Trp		
5	7555	7560	7565
	Ile Thr Glu Pro Ala Leu Asp Gly Gly Tyr Trp Tyr Arg Asn Leu Arg		
	7570	7575	7580
	His Arg Val Gly Phe Ala Pro Ala Val Glu Thr Leu Ala Thr Asp Glu		
	7585	7590	7595
10	Gly Phe Thr His Phe Val Glu Val Ser Ala His Pro Val Leu Thr Met		
	7605	7610	7615
	Ala Leu Pro Glu Thr Val Thr Gly Leu Gly Thr Leu Arg Arg Asp Asn		
	7620	7625	7630
	Gly Gly Gln His Arg Leu Thr Thr Ser Leu Ala Glu Ala Trp Ala Asn		
15	7635	7640	7645
	Gly Leu Thr Val Asp Trp Ala Ser Leu Leu Pro Thr Thr Thr Thr His		
	7650	7655	7660
	Pro Asp Leu Pro Thr Tyr Ala Phe Gln Thr Glu Arg Tyr Trp Pro Gln		
	7665	7670	7675
20	Pro Asp Leu Ser Ala Ala Gly Asp Ile Thr Ser Ala Gly Leu Gly Ala		
	7685	7690	7695
	Ala Glu His Pro Leu Leu Gly Ala Ala Val Ala Leu Ala Asp Ser Asp		
	7700	7705	7710
	Gly Cys Leu Leu Thr Gly Ser Leu Ser Leu Arg Thr His Pro Trp Leu		
25	7715	7720	7725
	Ala Asp His Ala Val Ala Gly Thr Val Leu Leu Pro Gly Thr Ala Phe		
	7730	7735	7740
	Val Glu Leu Ala Phe Arg Ala Gly Asp Gln Val Gly Cys Asp Leu Val		
	7745	7750	7755
30	Glu Glu Leu Thr Leu Asp Ala Pro Leu Val Leu Pro Arg Arg Gly Ala		
	7765	7770	7775
	Val Arg Val Gln Leu Ser Val Gly Ala Ser Asp Glu Ser Gly Arg Arg		
	7780	7785	7790
	Thr Phe Gly Leu Tyr Ala His Pro Glu Asp Ala Pro Gly Glu Ala Glu		
35	7795	7800	7805
	Trp Thr Arg His Ala Thr Gly Val Leu Ala Ala Arg Ala Asp Arg Thr		
	7810	7815	7820
	Ala Pro Val Ala Asp Pro Glu Ala Trp Pro Pro Pro Gly Ala Glu Pro		
	7825	7830	7835
40	Val Asp Val Asp Gly Leu Tyr Glu Arg Phe Ala Ala Asn Gly Tyr Gly		

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	7845	7850	7855
	Tyr Gly Pro Leu Phe Gln Gly Val Arg Gly Val Trp Arg Arg Gly Asp		
	7860	7865	7870
	Glu Val Phe Ala Asp Val Ala Leu Pro Ala Glu Val Ala Gly Ala Glu		
5	7875	7880	7885
	Gly Ala Arg Phe Gly Leu His Pro Ala Leu Leu Asp Ala Ala Val Gln		
	7890	7895	7900
	Ala Ala Gly Ala Gly Arg Gly Val Arg Arg Gly His Ala Ala Ala Val		
	7905	7910	7915
10	Arg Leu Glu Arg Asp Leu Leu Tyr Ala Val Gly Ala Thr Ala Leu Arg		
	7925	7930	7935
	Val Arg Leu Ala Pro Ala Gly Pro Asp Thr Val Ser Val Ser Ala Ala		
	7940	7945	7950
	Asp Ser Ser Gly Gln Pro Val Phe Ala Ala Asp Ser Leu Thr Val Leu		
15	7955	7960	7965
	Pro Val Asp Pro Ala Gln Leu Ala Ala Phe Ser Asp Pro Thr Leu Asp		
	7970	7975	7980
	Ala Leu His Leu Leu Glu Trp Thr Ala Trp Asp Gly Ala Ala Gln Ala		
	7985	7990	7995
20	Leu Pro Gly Ala Val Val Leu Gly Gly Asp Ala Asp Gly Leu Ala Ala		
	8005	8010	8015
	Ala Leu Arg Ala Gly Gly Thr Glu Val Leu Ser Phe Pro Asp Leu Thr		
	8020	8025	8030
	Asp Leu Val Glu Ala Val Asp Arg Gly Glu Thr Pro Ala Pro Ala Thr		
25	8035	8040	8045
	Val Leu Val Ala Cys Pro Ala Ala Gly Pro Asp Gly Pro Glu His Val		
	8050	8055	8060
	Arg Glu Ala Leu His Gly Ser Leu Ala Leu Met Gln Ala Trp Leu Ala		
	8065	8070	8075
30	Asp Glu Arg Phe Thr Asp Gly Arg Leu Val Leu Val Thr Arg Asp Ala		
	8085	8090	8095
	Val Ala Ala Arg Ser Gly Asp Gly Leu Arg Ser Thr Gly Gln Ala Ala		
	8100	8105	8110
	Val Trp Gly Leu Gly Arg Ser Ala Gln Thr Glu Ser Pro Gly Arg Phe		
35	8115	8120	8125
	Val Leu Leu Asp Leu Ala Gly Glu Ala Arg Thr Ala Gly Asp Ala Thr		
	8130	8135	8140
	Ala Gly Asp Gly Leu Thr Thr Gly Asp Ala Thr Val Gly Gly Thr Ser		
	8145	8150	8155
40	Gly Asp Ala Ala Leu Gly Ser Ala Leu Ala Thr Ala Leu Gly Ser Gly		

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	8165	8170	8175
	Glu Pro Gln Leu Ala Leu Arg Asp Gly Ala Leu Leu Val Pro Arg Leu		
	8180	8185	8190
	Ala Arg Ala Ala Ala Pro Ala Ala Ala Asp Gly Leu Ala Ala Ala Asp		
5	8195	8200	8205
	Gly Leu Ala Ala Leu Pro Leu Pro Ala Ala Pro Ala Leu Trp Arg Leu		
	8210	8215	8220
	Glu Pro Gly Thr Asp Gly Ser Leu Glu Ser Leu Thr Ala Ala Pro Gly		
	8225	8230	8235
10	Asp Ala Glu Thr Leu Ala Pro Glu Pro Leu Gly Pro Gly Gln Val Arg		
	8245	8250	8255
	Ile Ala Ile Arg Ala Thr Gly Leu Asn Phe Arg Asp Val Leu Ile Ala		
	8260	8265	8270
	Leu Gly Met Tyr Pro Asp Pro Ala Leu Met Gly Thr Glu Gly Ala Gly		
15	8275	8280	8285
	Val Val Thr Ala Thr Gly Pro Gly Val Thr His Leu Ala Pro Gly Asp		
	8290	8295	8300
	Arg Val Met Gly Leu Leu Ser Gly Ala Tyr Ala Pro Val Val Val Ala		
	8305	8310	8315
20	Asp Ala Arg Thr Val Ala Arg Met Pro Glu Gly Trp Thr Phe Ala Gln		
	8325	8330	8335
	Gly Ala Ser Val Pro Val Val Phe Leu Thr Ala Val Tyr Ala Leu Arg		
	8340	8345	8350
	Asp Leu Ala Asp Val Lys Pro Gly Glu Arg Leu Leu Val His Ser Ala		
25	8355	8360	8365
	Ala Gly Gly Val Gly Met Ala Ala Val Gln Leu Ala Arg His Trp Gly		
	8370	8375	8380
	Val Glu Val His Gly Thr Ala Ser His Gly Lys Trp Asp Ala Leu Arg		
	8385	8390	8395
30	Ala Leu Gly Leu Asp Asp Ala His Ile Ala Ser Ser Arg Thr Leu Asp		
	8405	8410	8415
	Phe Glu Ser Ala Phe Arg Ala Ala Ser Gly Gly Ala Gly Met Asp Val		
	8420	8425	8430
	Val Leu Asn Ser Leu Ala Arg Glu Phe Val Asp Ala Ser Leu Arg Leu		
35	8435	8440	8445
	Leu Gly Pro Gly Gly Arg Phe Val Glu Met Gly Lys Thr Asp Val Arg		
	8450	8455	8460
	Asp Ala Glu Arg Val Ala Ala Asp His Pro Gly Val Gly Tyr Arg Ala		
	8465	8470	8475
40	Phe Asp Leu Gly Glu Ala Gly Pro Glu Arg Ile Gly Glu Met Leu Ala		

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	8485	8490	8495
	Glu Val Ile Ala Leu Phe Glu Asp Gly Val Leu Arg His Leu Pro Val		
	8500	8505	8510
	Thr Thr Trp Asp Val Arg Arg Ala Arg Asp Ala Phe Arg His Val Ser		
5	8515	8520	8525
	Gln Ala Arg His Thr Gly Lys Val Val Leu Thr Met Pro Ser Gly Leu		
	8530	8535	8540
	Asp Pro Glu Gly Thr Val Leu Leu Thr Gly Gly Thr Gly Ala Leu Gly		
	8545	8550	8555
10	Gly Ile Val Ala Arg His Val Val Gly Glu Trp Gly Val Arg Arg Leu		
	8565	8570	8575
	Leu Leu Val Ser Arg Arg Gly Thr Asp Ala Pro Gly Ala Gly Glu Leu		
	8580	8585	8590
	Val His Glu Leu Glu Ala Leu Gly Ala Asp Val Ser Val Ala Ala Cys		
15	8595	8600	8605
	Asp Val Ala Asp Arg Glu Ala Leu Thr Ala Val Leu Asp Ser Ile Pro		
	8610	8615	8620
	Ala Glu His Pro Leu Thr Ala Val Val His Thr Ala Gly Val Leu Ser		
	8625	8630	8635
20	Asp Gly Thr Leu Pro Ser Met Thr Ala Glu Asp Val Glu His Val Leu		
	8645	8650	8655
	Arg Pro Lys Val Asp Ala Ala Phe Leu Leu Asp Glu Leu Thr Ser Thr		
	8660	8665	8670
	Pro Gly Tyr Asp Leu Ala Ala Phe Val Met Phe Ser Ser Ala Ala Ala		
25	8675	8680	8685
	Val Phe Gly Gly Ala Gly Gln Gly Ala Tyr Ala Ala Ala Asn Ala Thr		
	8690	8695	8700
	Leu Asp Ala Leu Ala Trp Arg Arg Arg Thr Ala Gly Leu Pro Ala Leu		
	8705	8710	8715
30	Ser Leu Gly Trp Gly Leu Trp Ala Glu Thr Ser Gly Met Thr Gly Gly		
	8725	8730	8735
	Leu Ser Asp Thr Asp Arg Ser Arg Leu Ala Arg Ser Gly Ala Thr Pro		
	8740	8745	8750
	Met Asp Ser Glu Leu Thr Leu Ser Leu Leu Asp Ala Ala Met Arg Arg		
35	8755	8760	8765
	Asp Asp Pro Ala Leu Val Pro Ile Ala Leu Asp Val Ala Ala Leu Arg		
	8770	8775	8780
	Ala Gln Gln Arg Asp Gly Met Leu Ala Pro Leu Leu Ser Gly Leu Thr		
	8785	8790	8795
40	Arg Gly Ser Arg Val Gly Gly Ala Pro Val Asn Gln Arg Arg Ala Ala		
			8800



	8805	8810	8815
	Ala Gly Gly Ala Gly Glu Ala Asp Thr Asp Leu Gly Gly Arg Leu Ala		
	8820	8825	8830
	Ala Met Thr Pro Asp Asp Arg Val Ala His Leu Arg Asp Leu Val Arg		
5	8835	8840	8845
	Thr His Val Ala Thr Val Leu Gly His Gly Thr Pro Ser Arg Val Asp		
	8850	8855	8860
	Leu Glu Arg Ala Phe Arg Asp Thr Gly Phe Asp Ser Leu Thr Ala Val		
	8865	8870	8875
10	Glu Leu Arg Asn Arg Leu Asn Ala Ala Thr Gly Leu Arg Leu Pro Ala		8880
	8885	8890	8895
	Thr Leu Val Phe Asp His Pro Thr Pro Gly Glu Leu Ala Gly His Leu		
	8900	8905	8910
	Leu Asp Glu Leu Ala Thr Ala Ala Gly Gly Ser Trp Ala Glu Gly Thr		
15	8915	8920	8925
	Gly Ser Gly Asp Thr Ala Ser Ala Thr Asp Arg Gln Thr Thr Ala Ala		
	8930	8935	8940
	Leu Ala Glu Leu Asp Arg Leu Glu Gly Val Leu Ala Ser Leu Ala Pro		
	8945	8950	8955
20	Ala Ala Gly Gly Arg Pro Glu Leu Ala Ala Arg Leu Arg Ala Leu Ala		8960
	8965	8970	8975
	Ala Ala Leu Gly Asp Asp Gly Asp Asp Ala Thr Asp Leu Asp Glu Ala		
	8980	8985	8990
	Ser Asp Asp Asp Leu Phe Ser Phe Ile Asp Lys Glu Leu Gly Asp Ser		
25	8995	9000	9005
	Asp Phe Met Ala Asn Asn Glu Asp Lys Leu Arg Asp Tyr Leu Lys Arg		
	9010	9015	9020
	Val Thr Ala Glu Leu Gln Gln Asn Thr Arg Arg Leu Arg Glu Ile Glu		
	9025	9030	9035
30	Gly Arg Thr His Glu Pro Val Ala Ile Val Gly Met Ala Cys Arg Leu		9040
	9045	9050	9055
	Pro Gly Gly Val Ala Ser Pro Glu Asp Leu Trp Gln Leu Val Ala Gly		
	9060	9065	9070
	Asp Gly Asp Ala Ile Ser Glu Phe Pro Gln Asp Arg Gly Trp Asp Val		
35	9075	9080	9085
	Glu Gly Leu Tyr Asp Pro Asp Pro Asp Ala Ser Gly Arg Thr Tyr Cys		
	9090	9095	9100
	Arg Ser Gly Gly Phe Leu His Asp Ala Gly Glu Phe Asp Ala Asp Phe		
	9105	9110	9115
40	Phe Gly Ile Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln Arg		9120

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	9125	9130	9135
	Leu Ser Leu Thr Thr Ala Trp Glu Ala Ile Glu Ser Ala Gly Ile Asp		
	9140	9145	9150
	Pro Thr Ala Leu Lys Gly Ser Gly Leu Gly Val Phe Val Gly Gly Trp		
5	9155	9160	9165
	His Thr Gly Tyr Thr Ser Gly Gln Thr Thr Ala Val Gln Ser Pro Glu		
	9170	9175	9180
	Leu Glu Gly His Leu Val Ser Gly Ala Ala Leu Gly Phe Leu Ser Gly		
	9185	9190	9195
10	Arg Ile Ala Tyr Val Leu Gly Thr Asp Gly Pro Ala Leu Thr Val Asp		
	9205	9210	9215
	Thr Ala Cys Ser Ser Ser Leu Val Ala Leu His Leu Ala Val Gln Ala		
	9220	9225	9230
	Leu Arg Lys Gly Glu Cys Asp Met Ala Leu Ala Gly Gly Val Thr Val		
15	9235	9240	9245
	Met Pro Asn Ala Asp Leu Phe Val Gln Phe Ser Arg Gln Arg Gly Leu		
	9250	9255	9260
	Ala Ala Asp Gly Arg Ser Lys Ala Phe Ala Thr Ser Ala Asp Gly Phe		
	9265	9270	9275
20	Gly Pro Ala Glu Gly Ala Gly Val Leu Leu Val Glu Arg Leu Ser Asp		
	9285	9290	9295
	Ala Arg Arg Asn Gly His Arg Ile Leu Ala Val Val Arg Gly Ser Ala		
	9300	9305	9310
	Val Asn Gln Asp Gly Ala Ser Asn Gly Leu Thr Ala Pro His Gly Pro		
25	9315	9320	9325
	Ser Gln Gln Arg Val Ile Arg Arg Ala Leu Ala Asp Ala Arg Leu Ala		
	9330	9335	9340
	Pro Gly Asp Val Asp Val Val Glu Ala His Gly Thr Gly Thr Arg Leu		
	9345	9350	9355
30	Gly Asp Pro Ile Glu Ala Gln Ala Leu Ile Ala Thr Tyr Gly Gln Glu		
	9365	9370	9375
	Lys Ser Ser Glu Gln Pro Leu Arg Leu Gly Ala Leu Lys Ser Asn Ile		
	9380	9385	9390
	Gly His Thr Gln Ala Ala Ala Gly Val Ala Gly Val Ile Lys Met Val		
35	9395	9400	9405
	Gln Ala Met Arg His Gly Leu Leu Pro Lys Thr Leu His Val Asp Glu		
	9410	9415	9420
	Pro Ser Asp Gln Ile Asp Trp Ser Ala Gly Thr Val Glu Leu Leu Thr		
	9425	9430	9435
40	Glu Ala Val Asp Trp Pro Glu Lys Gln Asp Gly Gly Leu Arg Arg Ala		

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	9765	9770	9775
	Lys Glu Leu Ala Glu Val Leu Ala Gly Leu Ala Pro Gln Ala Pro His		
	9780	9785	9790
	Val Pro Phe Phe Ser Thr Leu Glu Gly Thr Trp Ile Thr Glu Pro Val		
5	9795	9800	9805
	Leu Asp Gly Thr Tyr Trp Tyr Arg Asn Leu Arg His Arg Val Gly Phe		
	9810	9815	9820
	Ala Pro Ala Val Glu Thr Leu Ala Val Asp Gly Phe Thr His Phe Ile		
	9825	9830	9835
10	Glu Val Ser Ala His Pro Val Leu Thr Met Thr Leu Pro Glu Thr Val		
	9845	9850	9855
	Thr Gly Leu Gly Thr Leu Arg Arg Glu Gln Gly Gly Gln Glu Arg Leu		
	9860	9865	9870
	Val Thr Ser Leu Ala Glu Ala Trp Ala Asn Gly Leu Thr Ile Asp Trp		
15	9875	9880	9885
	Ala Pro Ile Leu Pro Thr Ala Thr Gly His His Pro Glu Leu Pro Thr		
	9890	9895	9900
	Tyr Ala Phe Gln Thr Glu Arg Phe Trp Leu Gln Ser Ser Ala Pro Thr		
	9905	9910	9915
20	Ser Ala Ala Asp Asp Trp Arg Tyr Arg Val Glu Trp Lys Pro Leu Thr		
	9925	9930	9935
	Ala Ser Gly Gln Ala Asp Leu Ser Gly Arg Trp Ile Val Ala Val Gly		
	9940	9945	9950
	Ser Glu Pro Glu Ala Glu Leu Leu Gly Ala Leu Lys Ala Ala Gly Ala		
25	9955	9960	9965
	Glu Val Asp Val Leu Glu Ala Gly Ala Asp Asp Asp Arg Glu Ala Leu		
	9970	9975	9980
	Ala Ala Arg Leu Thr Ala Leu Thr Thr Gly Asp Gly Phe Thr Gly Val		
	9985	9990	9995
30	Val Ser Leu Leu Asp Asp Leu Val Pro Gln Val Ala Trp Val Gln Ala		
	10005	10010	10015
	Leu Gly Asp Ala Gly Ile Lys Ala Pro Leu Trp Ser Val Thr Gln Gly		
	10020	10025	10030
	Ala Val Ser Val Gly Arg Leu Asp Thr Pro Ala Asp Pro Asp Arg Ala		
35	10035	10040	10045
	Met Leu Trp Gly Leu Gly Arg Val Val Ala Leu Glu His Pro Glu Arg		
	10050	10055	10060
	Trp Ala Gly Leu Val Asp Leu Pro Ala Gln Pro Asp Ala Ala Ala Leu		
	0065	10070	10075
40	Ala His Leu Val Thr Ala Leu Ser Gly Ala Thr Gly Glu Asp Gln Ile		

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	10085	10090	10095
	Ala Ile Arg Thr Thr Gly Leu His Ala Arg Arg Leu Ala Arg Ala Pro		
	10100	10105	10110
	Leu His Gly Arg Arg Pro Thr Arg Asp Trp Gln Pro His Gly Thr Val		
5	10115	10120	10125
	Leu Ile Thr Gly Gly Thr Gly Ala Leu Gly Ser His Ala Ala Arg Trp		
	10130	10135	10140
	Met Ala His His Gly Ala Glu His Leu Leu Leu Val Ser Arg Ser Gly		1
	0145	10150	10155
10	Glu Gln Ala Pro Gly Ala Thr Gln Leu Thr Ala Glu Leu Thr Ala Ser		
	10165	10170	10175
	Gly Ala Arg Val Thr Ile Ala Ala Cys Asp Val Ala Asp Pro His Ala		
	10180	10185	10190
	Met Arg Thr Leu Leu Asp Ala Ile Pro Ala Glu Thr Pro Leu Thr Ala		
15	10195	10200	10205
	Val Val His Thr Ala Gly Ala Pro Gly Gly Asp Pro Leu Asp Val Thr		
	10210	10215	10220
	Gly Pro Glu Asp Ile Ala Arg Ile Leu Gly Ala Lys Thr Ser Gly Ala		1
	0225	10230	10235
20	Glu Val Leu Asp Asp Leu Leu Arg Gly Thr Pro Leu Asp Ala Phe Val		
	10245	10250	10255
	Leu Tyr Ser Ser Asn Ala Gly Val Trp Gly Ser Gly Ser Gln Gly Val		
	10260	10265	10270
	Tyr Ala Ala Ala Asn Ala His Leu Asp Ala Leu Ala Ala Arg Arg Arg		
25	10275	10280	10285
	Ala Arg Gly Glu Thr Ala Thr Ser Val Ala Trp Gly Leu Trp Ala Gly		
	10290	10295	10300
	Asp Gly Met Gly Arg Gly Ala Asp Asp Ala Tyr Trp Gln Arg Arg Gly		1
	0305	10310	10315
30	Ile Arg Pro Met Ser Pro Asp Arg Ala Leu Asp Glu Leu Ala Lys Ala		
	10325	10330	10335
	Leu Ser His Asp Glu Thr Phe Val Ala Val Ala Asp Val Asp Trp Glu		
	10340	10345	10350
	Arg Phe Ala Pro Ala Phe Thr Val Ser Arg Pro Ser Leu Leu Leu Asp		
35	10355	10360	10365
	Gly Val Pro Glu Ala Arg Gln Ala Leu Ala Ala Pro Val Gly Ala Pro		
	10370	10375	10380
	Ala Pro Gly Asp Ala Ala Val Ala Pro Thr Gly Gln Ser Ser Ala Leu		1
	0385	10390	10395
40	Ala Ala Ile Thr Ala Leu Pro Glu Pro Glu Arg Arg Pro Ala Leu Leu		

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	10405	10410	10415
	Thr Leu Val Arg Thr His Ala Ala Ala Val Leu Gly His Ser Ser Pro		
	10420	10425	10430
	Asp Arg Val Ala Pro Gly Arg Ala Phe Thr Glu Leu Gly Phe Asp Ser		
5	10435	10440	10445
	Leu Thr Ala Val Gln Leu Arg Asn Gln Leu Ser Thr Val Val Gly Asn		
	10450	10455	10460
	Arg Leu Pro Ala Thr Thr Val Phe Asp His Pro Thr Pro Ala Ala Leu		1
	0465	10470	10475
			10480
10	Ala Ala His Leu His Glu Ala Tyr Leu Ala Pro Ala Glu Pro Ala Pro		
	10485	10490	10495
	Thr Asp Trp Glu Gly Arg Val Arg Arg Ala Leu Ala Glu Leu Pro Leu		
	10500	10505	10510
	Asp Arg Leu Arg Asp Ala Gly Val Leu Asp Thr Val Leu Arg Leu Thr		
15	10515	10520	10525
	Gly Ile Glu Pro Glu Pro Gly Ser Gly Gly Ser Asp Gly Gly Ala Ala		
	10530	10535	10540
	Asp Pro Gly Ala Glu Pro Glu Ala Ser Ile Asp Asp Leu Asp Ala Glu		1
	0545	10550	10555
			10560
20	Ala Leu Ile Arg Met Ala Leu Gly Pro Arg Asn Thr Met Thr Ser Ser		
	10565	10570	10575
	Asn Glu Gln Leu Val Asp Ala Leu Arg Ala Ser Leu Lys Glu Asn Glu		
	10580	10585	10590
	Glu Leu Arg Lys Glu Ser Arg Arg Arg Ala Asp Arg Arg Gln Glu Pro		
25	10595	10600	10605
	Met Ala Ile Val Gly Met Ser Cys Arg Phe Ala Gly Gly Ile Arg Ser		
	10610	10615	10620
	Pro Glu Asp Leu Trp Asp Ala Val Ala Ala Gly Lys Asp Leu Val Ser		1
	0625	10630	10635
			10640
30	Glu Val Pro Glu Glu Arg Gly Trp Asp Ile Asp Ser Leu Tyr Asp Pro		
	10645	10650	10655
	Val Pro Gly Arg Lys Gly Thr Thr Tyr Val Arg Asn Ala Ala Phe Leu		
	10660	10665	10670
	Asp Asp Ala Ala Gly Phe Asp Ala Ala Phe Phe Gly Ile Ser Pro Arg		
35	10675	10680	10685
	Glu Ala Leu Ala Met Asp Pro Gln Gln Arg Gln Leu Leu Glu Ala Ser		
	10690	10695	10700
	Trp Glu Val Phe Glu Arg Ala Gly Ile Asp Pro Ala Ser Val Arg Gly		1
	0705	10710	10715
			10720
40	Thr Asp Val Gly Val Tyr Val Gly Cys Gly Tyr Gln Asp Tyr Ala Pro		

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	10725	10730	10735
	Asp Ile Arg Val Ala Pro Glu Gly Thr Gly Gly Tyr Val Val Thr Gly		
	10740	10745	10750
	Asn Ser Ser Ala Val Ala Ser Gly Arg Ile Ala Tyr Ser Leu Gly Leu		
5	10755	10760	10765
	Glu Gly Pro Ala Val Thr Val Asp Thr Ala Cys Ser Ser Ser Leu Val		
	10770	10775	10780
	Ala Leu His Leu Ala Leu Lys Gly Leu Arg Asn Gly Asp Cys Ser Thr		
	0785	10790	10795
10	Ala Leu Val Gly Gly Val Ala Val Leu Ala Thr Pro Gly Ala Phe Ile		
	10805	10810	10815
	Glu Phe Ser Ser Gln Gln Ala Met Ala Ala Asp Gly Arg Thr Lys Gly		
	10820	10825	10830
	Phe Ala Ser Ala Ala Asp Gly Leu Ala Trp Gly Glu Gly Val Ala Val		
15	10835	10840	10845
	Leu Leu Leu Glu Arg Leu Ser Asp Ala Arg Arg Lys Gly His Arg Val		
	10850	10855	10860
	Leu Ala Val Val Arg Gly Ser Ala Ile Asn Gln Asp Gly Ala Ser Asn		
	0865	10870	10875
20	Gly Leu Thr Ala Pro His Gly Pro Ser Gln Gln His Leu Ile Arg Gln		
	10885	10890	10895
	Ala Leu Ala Asp Ala Arg Leu Thr Ser Ser Asp Val Asp Val Val Glu		
	10900	10905	10910
	Gly His Gly Thr Gly Thr Arg Leu Gly Asp Pro Ile Glu Ala Gln Ala		
25	10915	10920	10925
	Leu Leu Ala Thr Tyr Gly Gln Gly Arg Ala Pro Gly Gln Pro Leu Arg		
	10930	10935	10940
	Leu Gly Thr Leu Lys Ser Asn Ile Gly His Thr Gln Ala Ala Ser Gly		
	0945	10950	10955
30	Val Ala Gly Val Ile Lys Met Val Gln Ala Leu Arg His Gly Val Leu		
	10965	10970	10975
	Pro Lys Thr Leu His Val Asp Glu Pro Thr Asp Gln Val Asp Trp Ser		
	10980	10985	10990
	Ala Gly Ser Val Glu Leu Leu Thr Glu Ala Val Asp Trp Pro Glu Arg		
35	10995	11000	11005
	Pro Gly Arg Leu Arg Arg Ala Gly Val Ser Ala Phe Gly Val Gly Gly		
	11010	11015	11020
	Thr Asn Ala His Val Val Leu Glu Glu Ala Pro Ala Val Glu Glu Ser		
	1025	11030	11035
40	Pro Ala Val Glu Pro Pro Ala Gly Gly Gly Val Val Pro Trp Pro Val		

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	11045	11050	11055
Ser Ala Lys Thr Ser Ala Ala Leu Asp Ala Gln Ile Gly Gln Leu Ala			
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Ala Tyr Ala Glu Asp Arg Thr Asp Val Asp Pro Ala Val Ala Ala Arg			
5 11075	11080	11085	
Ala Leu Val Asp Ser Arg Thr Ala Met Glu His Arg Ala Val Ala Val			
11090	11095	11100	1
Gly Asp Ser Arg Glu Ala Leu Arg Asp Ala Leu Arg Met Pro Glu Gly			
1105	11110	11115	11120
10 Leu Val Arg Gly Thr Val Thr Asp Pro Gly Arg Val Ala Phe Val Phe			
11125	11130	11135	
Pro Gly Gln Gly Thr Gln Trp Ala Gly Met Gly Ala Glu Leu Leu Asp			
11140	11145	11150	
Ser Ser Pro Glu Phe Ala Ala Ala Met Ala Glu Cys Glu Thr Ala Leu			
15 11155	11160	11165	
Ser Pro Tyr Val Asp Trp Ser Leu Glu Ala Val Val Arg Gln Ala Pro			
11170	11175	11180	1
Ser Ala Pro Thr Leu Asp Arg Val Asp Val Val Gln Pro Val Thr Phe			
1185	11190	11195	11200
20 Ala Val Met Val Ser Leu Ala Lys Val Trp Gln His His Gly Ile Thr			
11205	11210	11215	
Pro Glu Ala Val Ile Gly His Ser Gln Gly Glu Ile Ala Ala Ala Tyr			
11220	11225	11230	
Val Ala Gly Ala Leu Thr Leu Asp Asp Ala Ala Arg Val Val Thr Leu			
25 11235	11240	11245	
Arg Ser Lys Ser Ile Ala Ala His Leu Ala Gly Lys Gly Gly Met Ile			
11250	11255	11260	1
Ser Leu Ala Leu Ser Glu Glu Ala Thr Arg Gln Arg Ile Glu Asn Leu			
1265	11270	11275	11280
30 His Gly Leu Ser Ile Ala Ala Val Asn Gly Pro Thr Ala Thr Val Val			
11285	11290	11295	
Ser Gly Asp Pro Thr Gln Ile Gln Glu Leu Ala Gln Ala Cys Glu Ala			
11300	11305	11310	
Asp Gly Ile Arg Ala Arg Ile Ile Pro Val Asp Tyr Ala Ser His Ser			
35 11315	11320	11325	
Ala His Val Glu Thr Ile Glu Asn Glu Leu Ala Asp Val Leu Ala Gly			
11330	11335	11340	1
Leu Ser Pro Gln Thr Pro Gln Val Pro Phe Phe Ser Thr Leu Glu Gly			
1345	11350	11355	11360
40 Thr Trp Ile Thr Glu Pro Ala Leu Asp Gly Gly Tyr Trp Tyr Arg Asn			



	11365	11370	11375
	Leu Arg His Arg Val Gly Phe Ala Pro Ala Val Glu Thr Leu Ala Thr		
	11380	11385	11390
	Asp Glu Gly Phe Thr His Phe Ile Glu Val Ser Ala His Pro Val Leu		
5	11395	11400	11405
	Thr Met Thr Leu Pro Asp Lys Val Thr Gly Leu Ala Thr Leu Arg Arg		
	11410	11415	11420
	Glu Asp Gly Gly Gln His Arg Leu Thr Thr Ser Leu Ala Glu Ala Trp		
	1425	11430	11435
			11440
10	Ala Asn Gly Leu Ala Leu Asp Trp Ala Ser Leu Leu Pro Ala Thr Gly		
	11445	11450	11455
	Ala Leu Ser Pro Ala Val Pro Asp Leu Pro Thr Tyr Ala Phe Gln His		
	11460	11465	11470
	Arg Ser Tyr Trp Ile Ser Pro Ala Gly Pro Gly Glu Ala Pro Ala His		
15	11475	11480	11485
	Thr Ala Ser Gly Arg Glu Ala Val Ala Glu Thr Gly Leu Ala Trp Gly		
	11490	11495	11500
	Pro Gly Ala Glu Asp Leu Asp Glu Glu Gly Arg Arg Ser Ala Val Leu		
	1505	11510	11515
			11520
20	Ala Met Val Met Arg Gln Ala Ala Ser Val Leu Arg Cys Asp Ser Pro		
	11525	11530	11535
	Glu Glu Val Pro Val Asp Arg Pro Leu Arg Glu Ile Gly Phe Asp Ser		
	11540	11545	11550
	Leu Thr Ala Val Asp Phe Arg Asn Arg Val Asn Arg Leu Thr Gly Leu		
25	11555	11560	11565
	Gln Leu Pro Pro Thr Val Val Phe Gln His Pro Thr Pro Val Ala Leu		
	11570	11575	11580
	Ala Glu Arg Ile Ser Asp Glu Leu Ala Glu Arg Asn Trp Ala Val Ala		
	1585	11590	11595
			11600
30	Glu Pro Ser Asp His Glu Gln Ala Glu Glu Glu Lys Ala Ala Ala Pro		
	11605	11610	11615
	Ala Gly Ala Arg Ser Gly Ala Asp Thr Gly Ala Gly Ala Gly Met Phe		
	11620	11625	11630
	Arg Ala Leu Phe Arg Gln Ala Val Glu Asp Asp Arg Tyr Gly Glu Phe		
35	11635	11640	11645
	Leu Asp Val Leu Ala Glu Ala Ser Ala Phe Arg Pro Gln Phe Ala Ser		
	11650	11655	11660
	Pro Glu Ala Cys Ser Glu Arg Leu Asp Pro Val Leu Leu Ala Gly Gly		
	1665	11670	11675
			11680
40	Pro Thr Asp Arg Ala Glu Gly Arg Ala Val Leu Val Gly Cys Thr Gly		

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	12005	12010	12015
	Ser Leu Gly Ala Ser Val Ala Phe Glu Thr Ala Arg Ile Leu Glu Gln		
	12020	12025	12030
	Arg His Gly Val Arg Pro Glu Gly Leu Tyr Val Ser Gly Arg Arg Ala		
5	12035	12040	12045
	Pro Ser Leu Ala Pro Asp Arg Leu Val His Gln Leu Asp Asp Arg Ala		
	12050	12055	12060
	Phe Leu Ala Glu Ile Arg Arg Leu Ser Gly Thr Asp Glu Arg Phe Leu		1
	2065	12070	12075
			12080
10	Gln Asp Asp Glu Leu Leu Arg Leu Val Leu Pro Ala Leu Arg Ser Asp		
	12085	12090	12095
	Tyr Lys Ala Ala Glu Thr Tyr Leu His Arg Pro Ser Ala Lys Leu Thr		
	12100	12105	12110
	Cys Pro Val Met Ala Leu Ala Gly Asp Arg Asp Pro Lys Ala Pro Leu		
15	12115	12120	12125
	Asn Glu Val Ala Glu Trp Arg Arg His Thr Ser Gly Pro Phe Cys Leu		
	12130	12135	12140
	Arg Ala Tyr Ser Gly Gly His Phe Tyr Leu Asn Asp Gln Trp His Glu		1
	2145	12150	12155
			12160
20	Ile Cys Asn Asp Ile Ser Asp His Leu Leu Val Thr Arg Gly Ala Pro		
	12165	12170	12175
	Asp Ala Arg Val Val Gln Pro Pro Thr Ser Leu Ile Glu Gly Ala Ala		
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	Lys Arg Trp Gln Asn Pro Arg		
25	12195	1	

30 <210> 7  
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 <212> DNA  
 <213> Streptomyces venezuelae

35 <400> 7

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gccctcgaca gccagtggct gtccaacggc ggcccgcctc tccgcgagtt cgaggagcgc	180
gtcgccgggc tcgcccgggt ccggcatgcc gtggccacct gcaacgccac ggccgggctc	240
40 cagctcctcg cgcacgccgc cggcctcacc ggcgaagtga tcatgccgtc gatgacgttc	300

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20      <210> 8
      <211> 415
      <212> PRT
      <213> Streptomyces venezuelae

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Phe Asp Gln Pro Leu Leu Val Gly Arg Pro Asn Arg Ile Asp Arg Ala
20 25 30
Arg Leu Tyr Glu Arg Leu Asp Arg Ala Leu Asp Ser Gln Trp Leu Ser
35 40 45
30 Asn Gly Gly Pro Leu Val Arg Glu Phe Glu Glu Arg Val Ala Gly Leu
50 55 60
Ala Gly Val Arg His Ala Val Ala Thr Cys Asn Ala Thr Ala Gly Leu
65 70 75 80
Gln Leu Leu Ala His Ala Ala Gly Leu Thr Gly Glu Val Ile Met Pro
35 85 90 95
Ser Met Thr Phe Ala Ala Thr Pro His Ala Leu Arg Trp Ile Gly Leu
100 105 110
Thr Pro Val Phe Ala Asp Ile Asp Pro Asp Thr Gly Asn Leu Asp Pro
115 120 125
40 Asp Gln Val Ala Ala Ala Val Thr Pro Arg Thr Ser Ala Val Val Gly

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&lt;400&gt; 9

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 cccgacgagg ccggaacgac cgcccgccac ctctgtccggc tcgccgtgcg ctacggcaac 180  
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 cccgcccggg cgtactggaa gaacaccctg ctcccgtcgc aacagcgcg cgtcttcgac 360  
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 tgcattgttcc gctgccactt ctgcgtccgt gtgaccggcg cccgctacga cccgtccgcc 480  
 10 ctcgacgccc gcaacgccat gttccggtcg gtcacgcagc agataccgcg gggcaacccc 540  
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 25 gtcgtcaccg cccgcctgaa ccagctggag cgcgacgccg cggacggctg ggaggaggcc 1440  
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&lt;210&gt; 10

&lt;211&gt; 485

30 &lt;212&gt; PRT

&lt;213&gt; Streptomyces venezuelae

&lt;400&gt; 10

Met Thr Ala Pro Ala Leu Ser Ala Thr Ala Pro Ala Glu Arg Cys Ala  
 35 1 5 10 15  
 His Pro Gly Ala Asp Leu Gly Ala Ala Val His Ala Val Gly Gln Thr  
 20 25 30  
 Leu Ala Ala Gly Gly Leu Val Pro Pro Asp Glu Ala Gly Thr Thr Ala  
 35 40 45  
 40 Arg His Leu Val Arg Leu Ala Val Arg Tyr Gly Asn Ser Pro Phe Thr

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370                      375                      380  
 Met Arg Pro Thr Ala His Pro Gln Val Ala Val Gln Val Asp Leu Leu  
 385                      390                      395                      400  
 Gly Asp Val Tyr Leu Tyr Arg Glu Ala Gly Phe Pro Asp Leu Asp Gly  
 5                      405                      410                      415  
 Ala Thr Arg Tyr Ile Ala Gly Arg Val Thr Pro Asp Thr Ser Leu Thr  
                     420                      425                      430  
 Glu Val Val Arg Asp Phe Val Glu Arg Gly Gly Glu Val Ala Ala Val  
                     435                      440                      445  
 10 Asp Gly Asp Glu Tyr Phe Met Asp Gly Phe Asp Gln Val Val Thr Ala  
                     450                      455                      460  
 Arg Leu Asn Gln Leu Glu Arg Asp Ala Ala Asp Gly Trp Glu Glu Ala  
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 Arg Gly Phe Leu Arg  
 15                      485

<210> 11

<211> 879

<212> DNA

20 <213> *Streptomyces venezuelae*

<400> 11

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 ttccagtcgc ttctcggaaa cggcaggcac ctgggaatag aactcgacta tgcggtccag 240  
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 35 gaggagcggc agggcgtctg gatcgcgggc cttgaggaga tcgccttcg catgggcttc 780  
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<210> 12

40 <211> 292





Glu Gly Ala Pro

290

&lt;210&gt; 13

5 &lt;211&gt; 1014

&lt;212&gt; DNA

&lt;213&gt; Streptomyces venezuelae

&lt;400&gt; 13

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 tacgcggggca accgcgcca cctcgccccg gtggacgcgg acccgcgact gcgcttcgtc 180  
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 15 gagaccaacg tgcagggcac gcagacgctg ctccagtgcg ccgtcgacgc cggcgctcggc 360  
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 20 gacggcgggga cgctcccgt gtacggcgac ggcgcgaacg tccgcgagtg ggtgcacacc 660  
 gacgaccact gccggggcat cgcgctcgtc ctgcgcggcg gccgggcccgc cgagatctac 720  
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 25 gcggacggcc tcgcgcggac cgctcgctgg taccgggaga accgcggctg gtgggagccg 960  
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&lt;210&gt; 14

&lt;211&gt; 337

30 &lt;212&gt; PRT

&lt;213&gt; Streptomyces venezuelae

&lt;400&gt; 14

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 Val Arg Gln Leu Leu Ala Gly Ala Tyr Pro Asp Val Pro Ala Asp Glu  
 20 25 30  
 Val Ile Val Leu Asp Ser Leu Thr Tyr Ala Gly Asn Arg Ala Asn Leu  
 35 40 45  
 40 Ala Pro Val Asp Ala Asp Pro Arg Leu Arg Phe Val His Gly Asp Ile

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	50		55		60	
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	Val His Phe Ala Ala Glu Ser His Val Asp Arg Ser Ile Ala Gly Ala					
5		85		90		95
	Ser Val Phe Thr Glu Thr Asn Val Gln Gly Thr Gln Thr Leu Leu Gln					
		100		105		110
	Cys Ala Val Asp Ala Gly Val Gly Arg Val Val His Val Ser Thr Asp					
		115		120		125
10	Glu Val Tyr Gly Ser Ile Asp Ser Gly Ser Trp Thr Glu Ser Ser Pro					
		130		135		140
	Leu Glu Pro Asn Ser Pro Tyr Ala Ala Ser Lys Ala Gly Ser Asp Leu					
		145		150		155
	Val Ala Arg Ala Tyr His Arg Thr Tyr Gly Leu Asp Val Arg Ile Thr					
15		165		170		175
	Arg Cys Cys Asn Asn Tyr Gly Pro Tyr Gln His Pro Glu Lys Leu Ile					
		180		185		190
	Pro Leu Phe Val Thr Asn Leu Leu Asp Gly Gly Thr Leu Pro Leu Tyr					
		195		200		205
20	Gly Asp Gly Ala Asn Val Arg Glu Trp Val His Thr Asp Asp His Cys					
		210		215		220
	Arg Gly Ile Ala Leu Val Leu Ala Gly Gly Arg Ala Gly Glu Ile Tyr					
		225		230		235
	His Ile Gly Gly Gly Leu Glu Leu Thr Asn Arg Glu Leu Thr Gly Ile					
25		245		250		255
	Leu Leu Asp Ser Leu Gly Ala Asp Trp Ser Ser Val Arg Lys Val Ala					
		260		265		270
	Asp Arg Lys Gly His Asp Leu Arg Tyr Ser Leu Asp Gly Gly Glu Ile					
		275		280		285
30	Glu Arg Glu Leu Gly Tyr Arg Pro Gln Val Ser Phe Ala Asp Gly Leu					
		290		295		300
	Ala Arg Thr Val Arg Trp Tyr Arg Glu Asn Arg Gly Trp Trp Glu Pro					
		305		310		315
	Leu Lys Ala Thr Ala Pro Gln Leu Pro Ala Thr Ala Val Glu Val Ser					
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	Ala					

&lt;210&gt; 15

40

&lt;211&gt; 1140

TOPTT "4888660

&lt;212&gt; DNA

&lt;213&gt; Streptomyces venezuelae

&lt;400&gt; 15

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 10 tccgccaccg gcgcgacccc cgtgcccgtc gagccgcacg aggaccaccc caccctggac 360  
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 gccgagagct tcgcgcggca ggtcctcagc ctgccgatcg gcccgacct ggagcgcccc 1080  
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25 &lt;210&gt; 16

&lt;211&gt; 379

&lt;212&gt; PRT

&lt;213&gt; Streptomyces venezuelae

30 &lt;400&gt; 16

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 Ala Ala Tyr Glu Glu Leu Arg Ala Glu Thr Asp Ala Ala Ile Ala Arg  
 20 25 30  
 35 Val Leu Asp Ser Gly Arg Tyr Leu Leu Gly Pro Glu Leu Glu Gly Phe  
 35 40 45  
 Glu Ala Glu Phe Ala Ala Tyr Cys Glu Thr Asp His Ala Val Gly Val  
 50 55 60  
 Asn Ser Gly Met Asp Ala Leu Gln Leu Ala Leu Arg Gly Leu Gly Ile  
 40 65 70 75 80

T06TT"48E8560

Gly Pro Gly Asp Glu Val Ile Val Pro Ser His Thr Tyr Ile Ala Ser  
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 Trp Leu Ala Val Ser Ala Thr Gly Ala Thr Pro Val Pro Val Glu Pro  
                             100                            105                            110  
 5 His Glu Asp His Pro Thr Leu Asp Pro Leu Leu Val Glu Lys Ala Ile  
                             115                            120                            125  
 Thr Pro Arg Thr Arg Ala Leu Leu Pro Val His Leu Tyr Gly His Pro  
                             130                            135                            140  
 Ala Asp Met Asp Ala Leu Arg Glu Leu Ala Asp Arg His Gly Leu His  
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 Ile Val Glu Asp Ala Ala Gln Ala His Gly Ala Arg Tyr Arg Gly Arg  
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 Arg Ile Gly Ala Gly Ser Ser Val Ala Ala Phe Ser Phe Tyr Pro Gly  
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 15 Lys Asn Leu Gly Cys Phe Gly Asp Gly Gly Ala Val Val Thr Gly Asp  
                             195                            200                            205  
 Pro Glu Leu Ala Glu Arg Leu Arg Met Leu Arg Asn Tyr Gly Ser Arg  
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 Gln Lys Tyr Ser His Glu Thr Lys Gly Thr Asn Ser Arg Leu Asp Glu  
 20 225                            230                            235                            240  
 Met Gln Ala Ala Val Leu Arg Ile Arg Leu Ala His Leu Asp Ser Trp  
                             245                            250                            255  
 Asn Gly Arg Arg Ser Ala Leu Ala Ala Glu Tyr Leu Ser Gly Leu Ala  
                             260                            265                            270  
 25 Gly Leu Pro Gly Ile Gly Leu Pro Val Thr Ala Pro Asp Thr Asp Pro  
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 Val Trp His Leu Phe Thr Val Arg Thr Glu Arg Arg Asp Glu Leu Arg  
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 Ser His Leu Asp Ala Arg Gly Ile Asp Thr Leu Thr His Tyr Pro Val  
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 Pro Val His Leu Ser Pro Ala Tyr Ala Gly Glu Ala Pro Pro Glu Gly  
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 Ser Leu Pro Arg Ala Glu Ser Phe Ala Arg Gln Val Leu Ser Leu Pro  
                             340                            345                            350  
 35 Ile Gly Pro His Leu Glu Arg Pro Gln Ala Leu Arg Val Ile Asp Ala  
                             355                            360                            365  
 Val Arg Glu Trp Ala Glu Arg Val Asp Gln Ala  
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&lt;211&gt; 714

&lt;212&gt; DNA

&lt;213&gt; Streptomyces venezuelae

5 &lt;400&gt; 17

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10 cccgacgcca cgctccacca gggcgacatg cgggacttcc ggctcggccg gaagttctcc      300
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&lt;210&gt; 18

20 &lt;211&gt; 237

&lt;212&gt; PRT

&lt;213&gt; Streptomyces venezuelae

&lt;400&gt; 18

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   1           5           10           15
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           20           25           30
Arg Ser Arg Thr Pro Glu Ala Ser Ser Leu Leu Asp Val Ala Cys Gly
30           35           40           45
Thr Gly Thr His Leu Glu His Phe Thr Lys Glu Phe Gly Asp Thr Ala
           50           55           60
Gly Leu Glu Leu Ser Glu Asp Met Leu Thr His Ala Arg Lys Arg Leu
           65           70           75           80
35 Pro Asp Ala Thr Leu His Gln Gly Asp Met Arg Asp Phe Arg Leu Gly
           85           90           95
Arg Lys Phe Ser Ala Val Val Ser Met Phe Ser Ser Val Gly Tyr Leu
           100          105          110
Lys Thr Thr Glu Glu Leu Gly Ala Ala Val Ala Ser Phe Ala Glu His
40          115          120          125

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T06T11-18E8860



ctcgacgacc cctcgggtcgc caccgccgcg caccggctgc gcgaggagac cttcggcgac 1200  
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 ccggccgacg cccggcactg a 1281

5 <210> 20  
 <211> 426  
 <212> PRT  
 <213> Streptomyces venezuelae

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 15 Val Ala Ser Gln Pro Ala Leu Thr Asp Thr Ile Thr Gly Ser Gly Leu  
 35 40 45  
 Ala Ala Val Pro Val Gly Thr Asp His Leu Ile His Glu Tyr Arg Val  
 50 55 60  
 Arg Met Ala Gly Glu Pro Arg Pro Asn His Pro Ala Ile Ala Phe Asp  
 20 65 70 75 80  
 Glu Ala Arg Pro Glu Pro Leu Asp Trp Asp His Ala Leu Gly Ile Glu  
 85 90 95  
 Ala Ile Leu Ala Pro Tyr Phe His Leu Leu Ala Asn Asn Asp Ser Met  
 100 105 110  
 25 Val Asp Asp Leu Val Asp Phe Ala Arg Ser Trp Gln Pro Asp Leu Val  
 115 120 125  
 Leu Trp Glu Pro Thr Thr Tyr Ala Gly Ala Val Ala Ala Gln Val Thr  
 130 135 140  
 Gly Ala Ala His Ala Arg Val Leu Trp Gly Pro Asp Val Met Gly Ser  
 30 145 150 155 160  
 Ala Arg Arg Lys Phe Val Ala Leu Arg Asp Arg Gln Pro Pro Glu His  
 165 170 175  
 Arg Glu Asp Pro Thr Ala Glu Trp Leu Thr Trp Thr Leu Asp Arg Tyr  
 180 185 190  
 35 Gly Ala Ser Phe Glu Glu Glu Leu Leu Thr Gly Gln Phe Thr Ile Asp  
 195 200 205  
 Pro Thr Pro Pro Ser Leu Arg Leu Asp Thr Gly Leu Pro Thr Val Gly  
 210 215 220  
 Met Arg Tyr Val Pro Tyr Asn Gly Thr Ser Val Val Pro Asp Trp Leu  
 40 225 230 235 240

0998384-11901



Ser Glu Pro Pro Ala Arg Pro Arg Val Cys Leu Thr Leu Gly Val Ser  
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 Ala Arg Glu Val Leu Gly Gly Asp Gly Val Ser Gln Gly Asp Ile Leu  
 260 265 270  
 5 Glu Ala Leu Ala Asp Leu Asp Ile Glu Leu Val Ala Thr Leu Asp Ala  
 275 280 285  
 Ser Gln Arg Ala Glu Ile Arg Asn Tyr Pro Lys His Thr Arg Phe Thr  
 290 295 300  
 Asp Phe Val Pro Met His Ala Leu Leu Pro Ser Cys Ser Ala Ile Ile  
 10 305 310 315 320  
 His His Gly Gly Ala Gly Thr Tyr Ala Thr Ala Val Ile Asn Ala Val  
 325 330 335  
 Pro Gln Val Met Leu Ala Glu Leu Trp Asp Ala Pro Val Lys Ala Arg  
 340 345 350  
 15 Ala Val Ala Glu Gln Gly Ala Gly Phe Phe Leu Pro Pro Ala Glu Leu  
 355 360 365  
 Thr Pro Gln Ala Val Arg Asp Ala Val Val Arg Ile Leu Asp Asp Pro  
 370 375 380  
 Ser Val Ala Thr Ala Ala His Arg Leu Arg Glu Glu Thr Phe Gly Asp  
 20 385 390 395 400  
 Pro Thr Pro Ala Gly Ile Val Pro Glu Leu Glu Arg Leu Ala Ala Gln  
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 His Arg Arg Pro Pro Ala Asp Ala Arg His  
 420 425

25

<210> 21  
 <211> 1209  
 <212> DNA  
 <213> Streptomyces venezuelae

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 gccgcgaacg gcgacccgta cgccaccgtg ctgcgcggcc aggcggacga cccgtatccc 180  
 35 gcgtacgagc ggggtgcgtgc ccgcggcgcg ctctccttca gcccgcgagg cagctgggtc 240  
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<210> 22

15 <211> 402

<212> PRT

<213> *Streptomyces venezuelae*

<400> 22

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 Thr Arg Gly Ile His Trp Ile His Ala Ala Asn Gly Asp Pro Tyr Ala  
 25 35 40 45  
 Thr Val Leu Arg Gly Gln Ala Asp Asp Pro Tyr Pro Ala Tyr Glu Arg  
 50 55 60  
 Val Arg Ala Arg Gly Ala Leu Ser Phe Ser Pro Thr Gly Ser Trp Val  
 65 70 75 80  
 30 Thr Ala Asp His Ala Leu Ala Ala Ser Ile Leu Cys Ser Thr Asp Phe  
 85 90 95  
 Gly Val Ser Gly Ala Asp Gly Val Pro Val Pro Gln Gln Val Leu Ser  
 100 105 110  
 Tyr Gly Glu Gly Cys Pro Leu Glu Arg Glu Gln Val Leu Pro Ala Ala  
 35 115 120 125  
 Gly Asp Val Pro Glu Gly Gly Gln Arg Ala Val Val Glu Gly Ile His  
 130 135 140  
 Arg Glu Thr Leu Glu Gly Leu Ala Pro Asp Pro Ser Ala Ser Tyr Ala  
 145 150 155 160  
 40 Phe Glu Leu Leu Gly Gly Phe Val Arg Pro Ala Val Thr Ala Ala Ala

165 170 175  
 Ala Ala Val Leu Gly Val Pro Ala Asp Arg Arg Ala Asp Phe Ala Asp  
 180 185 190  
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 5 195 200 205  
 Ser Leu Arg Thr Val Arg Ala Ala Asp Gly Ala Leu Ala Glu Leu Thr  
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 Ala Leu Leu Ala Asp Ser Asp Asp Ser Pro Gly Ala Leu Leu Ser Ala  
 225 230 235 240  
 10 Leu Gly Val Thr Ala Ala Val Gln Leu Thr Gly Asn Ala Val Leu Ala  
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 Leu Leu Ala His Pro Glu Gln Trp Arg Glu Leu Cys Asp Arg Pro Gly  
 260 265 270  
 Leu Ala Ala Ala Ala Val Glu Glu Thr Leu Arg Tyr Asp Pro Pro Val  
 15 275 280 285  
 Gln Leu Asp Ala Arg Val Val Arg Gly Glu Thr Glu Leu Ala Gly Arg  
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 Arg Leu Pro Ala Gly Ala His Val Val Val Leu Thr Ala Ala Thr Gly  
 305 310 315 320  
 20 Arg Asp Pro Glu Val Phe Thr Asp Pro Glu Arg Phe Asp Leu Ala Arg  
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 Pro Asp Ala Ala Ala His Leu Ala Leu His Pro Ala Gly Pro Tyr Gly  
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 Pro Val Ala Ser Leu Val Arg Leu Gln Ala Glu Val Ala Leu Arg Thr  
 25 355 360 365  
 Leu Ala Gly Arg Phe Pro Gly Leu Arg Gln Ala Gly Asp Val Leu Arg  
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 Pro Arg Arg Ala Pro Val Gly Arg Gly Pro Leu Ser Val Pro Val Ser  
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 30 Ser Ser

&lt;210&gt; 23

&lt;211&gt; 2430

35

&lt;212&gt; DNA

<213> *Streptomyces venezuelae*

&lt;400&gt; 23

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60

120

00988384 111901

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	ggctaccttc	ccggcggtgcc	gcgtctgggc	atcccgagc	tgctgcccgc	cgacggccccg	300
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	gcgtcaaac	aggacatggg	cctggggccc	atgatgaaca	acatccgggt	gccgcacggc	480
	ggccggaact	acgagacctt	cagcgaggac	cccctgggtct	cctcgcgcac	cgcggtcgcc	540
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	acggtgacgg	tgaacgtcga	ccgccgtcag	ctgcagaccg	gttcgtcctc	cgccgacctg	2400
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 <211> 809  
 <212> PRT  
 <213> Streptomyces venezuelae

5

&lt;400&gt; 24

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 Thr Val Ala Ala Ala Ala Pro Gly Ala Ala Asp Thr Ala Asn Val Gln  
 35 40 45  
 Tyr Thr Ser Arg Ala Ala Glu Leu Val Ala Gln Met Thr Leu Asp Glu  
 50 55 60  
 15 Lys Ile Ser Phe Val His Trp Ala Leu Asp Pro Asp Arg Gln Asn Val  
 65 70 75 80  
 Gly Tyr Leu Pro Gly Val Pro Arg Leu Gly Ile Pro Glu Leu Arg Ala  
 85 90 95  
 Ala Asp Gly Pro Asn Gly Ile Arg Leu Val Gly Gln Thr Ala Thr Ala  
 20 100 105 110  
 Leu Pro Ala Pro Val Ala Leu Ala Ser Thr Phe Asp Asp Thr Met Ala  
 115 120 125  
 Asp Ser Tyr Gly Lys Val Met Gly Arg Asp Gly Arg Ala Leu Asn Gln  
 130 135 140  
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 145 150 155 160  
 Gly Arg Asn Tyr Glu Thr Phe Ser Glu Asp Pro Leu Val Ser Ser Arg  
 165 170 175  
 Thr Ala Val Ala Gln Ile Lys Gly Ile Gln Gly Ala Gly Leu Met Thr  
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 Thr Ala Lys His Phe Ala Ala Asn Asn Gln Glu Asn Asn Arg Phe Ser  
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 210 215 220  
 35 Ala Phe Glu Ala Ser Ser Lys Ala Gly Ala Ala Ser Phe Met Cys Ala  
 225 230 235 240  
 Tyr Asn Gly Leu Asn Gly Lys Pro Ser Cys Gly Asn Asp Glu Leu Leu  
 245 250 255  
 Asn Asn Val Leu Arg Thr Gln Trp Gly Phe Gln Gly Trp Val Met Ser  
 40 260 265 270

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 "T06T" +8888660



Lys Leu Ile Ser Ala Val Ala Asp Ala Asn Pro Asn Thr Ile Val Val  
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 Leu Asn Thr Gly Ser Ser Val Leu Met Pro Trp Leu Ser Lys Thr Arg  
 610 615 620  
 5 Ala Val Leu Asp Met Trp Tyr Pro Gly Gln Ala Gly Ala Glu Ala Thr  
 625 630 635 640  
 Ala Ala Leu Leu Tyr Gly Asp Val Asn Pro Ser Gly Lys Leu Thr Gln  
 645 650 655  
 Ser Phe Pro Ala Ala Glu Asn Gln His Ala Val Ala Gly Asp Pro Thr  
 10 660 665 670  
 Ser Tyr Pro Gly Val Asp Asn Gln Gln Thr Tyr Arg Glu Gly Ile His  
 675 680 685  
 Val Gly Tyr Arg Trp Phe Asp Lys Glu Asn Val Lys Pro Leu Phe Pro  
 690 695 700  
 15 Phe Gly His Gly Leu Ser Tyr Thr Ser Phe Thr Gln Ser Ala Pro Thr  
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 Val Val Arg Thr Ser Thr Gly Gly Leu Lys Val Thr Val Thr Val Arg  
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 Asn Ser Gly Lys Arg Ala Gly Gln Glu Val Val Gln Ala Tyr Leu Gly  
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 Ala Ser Pro Asn Val Thr Ala Pro Gln Ala Lys Lys Lys Leu Val Gly  
 755 760 765  
 Tyr Thr Lys Val Ser Leu Ala Ala Gly Glu Ala Lys Thr Val Thr Val  
 770 775 780  
 25 Asn Val Asp Arg Arg Gln Leu Gln Thr Gly Ser Ser Ser Ala Asp Leu  
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 Arg Gly Ser Ala Thr Val Asn Val Trp  
 805

- 30 <210> 25  
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 <221> VARIANT  
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 40 <223> Residue 4 is either V or I.

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 Asn Leu Val Thr His Val Glu Gly Asp Gly Arg Asn Val Leu Glu Ile  
 40 35 40 45



Gly Pro Gly Lys Gly Ala Ile Thr Glu Glu Leu Val Arg Ser Phe Asp  
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 Thr Val Thr Val Val Glu Met Asp Pro His Trp Ala Ala His Val Arg  
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 5 Arg Lys Phe Glu Gly Glu Arg Val Thr Val Phe Gln Gly Asp Phe Leu  
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 100 105 110  
 Phe Gly Ile Thr Thr Gln Ile Leu Arg Ser Leu Leu Glu Ser Thr Asn  
 10 115 120 125  
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 130 135 140  
 Ala Gly Arg Ser Gly Gly Ser Leu Leu Thr Thr Ser Trp Ala Pro Trp  
 145 150 155 160  
 15 Tyr Glu Phe Ala Val His Asp Arg Val Arg Ala Ser Ser Phe Arg Pro  
 165 170 175  
 Met Pro Arg Val Asp Gly Gly Val Leu Thr Ile Arg Arg Arg Pro Gln  
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 Pro Leu Leu Pro Glu Ser Ala Ser Arg Ala Phe Gln Asn Phe Ala Glu  
 20 195 200 205  
 Ala Val Phe Thr Gly Pro Gly Arg Gly Leu Ala Glu Ile Leu Arg Arg  
 210 215 220  
 His Ile Pro Lys Arg Thr Tyr Arg Ser Leu Ala Asp Arg His Gly Ile  
 225 230 235 240  
 25 Pro Asp Gly Gly Leu Pro Lys Asp Leu Thr Leu Thr Gln Trp Ile Ala  
 245 250 255  
 Leu Phe Gln Ala Ser Gln Pro Ser Tyr Ala Pro Gly Ala Pro Gly Thr  
 260 265 270  
 Arg Met Pro Gly Gln Gly Gly Gly Ala Gly Gly Arg Asp Tyr Asp Ser  
 30 275 280 285  
 Glu Thr Ser Arg Ala Ala Val Pro Gly Ser Arg Arg Tyr Gly Pro Thr  
 290 295 300  
 Arg Gly Gly Glu Pro Cys Ala Pro Arg Ala Gln Val Arg Gln Thr Lys  
 305 310 315 320  
 35 Gly Arg Gln Gly Ala Arg Gly Ser Ser Tyr Gly Arg Arg Thr Gly Arg  
 325 330 335

&lt;210&gt; 28

&lt;211&gt; 969

40 &lt;212&gt; DNA

0998384 11901

## &lt;213&gt; Streptomyces venezuelae

&lt;400&gt; 28

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&lt;210&gt; 29

&lt;211&gt; 322

&lt;212&gt; PRT

25 &lt;213&gt; Streptomyces venezuelae

&lt;400&gt; 29

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 Gly Arg Arg Ala Gln Arg Leu Gly Ala Arg Thr Pro Gly His Val Thr  
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	gcgctcgtcc	cgatcgccct	ggacgtcgcc	gcgctccgcg	cccagcagcg	cgacggcatg	10560
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	cagcgagggg	cagccgcggg	agggcggggc	gaggcgagca	cggacctcgg	cgggcggtcc	10680
40	gccgcgatga	caccggacga	ccgggtcgcg	cacctgcggg	acctcgtccg	tacgcacgtg	10740

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10

&lt;210&gt; 33

&lt;211&gt; 3739

15

&lt;212&gt; PRT

&lt;213&gt; Streptomyces venezuelae

&lt;400&gt; 33

Met Ser Thr Val Asn Glu Glu Lys Tyr Leu Asp Tyr Leu Arg Arg Ala  
20 1 5 10 15  
Thr Ala Asp Leu His Glu Ala Arg Gly Arg Leu Arg Glu Leu Glu Ala  
20 25 30  
Lys Ala Gly Glu Pro Val Ala Ile Val Gly Met Ala Cys Arg Leu Pro  
35 40 45  
25 Gly Gly Val Ala Ser Pro Glu Asp Leu Trp Arg Leu Val Ala Gly Gly  
50 55 60  
Glu Asp Ala Ile Ser Glu Phe Pro Gln Asp Arg Gly Trp Asp Val Glu  
65 70 75 80  
Gly Leu Tyr Asp Pro Asn Pro Glu Ala Thr Gly Lys Ser Tyr Ala Arg  
30 85 90 95  
Glu Ala Gly Phe Leu Tyr Glu Ala Gly Glu Phe Asp Ala Asp Phe Phe  
100 105 110  
Gly Ile Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln Arg Leu  
115 120 125  
35 Leu Leu Glu Ala Ser Trp Glu Ala Phe Glu His Ala Gly Ile Pro Ala  
130 135 140  
Ala Thr Ala Arg Gly Thr Ser Val Gly Val Phe Thr Gly Val Met Tyr  
145 150 155 160  
His Asp Tyr Ala Thr Arg Leu Thr Asp Val Pro Glu Gly Ile Glu Gly  
40 165 170 175

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Tyr Leu Gly Thr Gly Asn Ser Gly Ser Val Ala Ser Gly Arg Val Ala  
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 195 200 205  
 5 Ser Ser Ser Leu Val Ala Leu His Leu Ala Val Gln Ala Leu Arg Lys  
 210 215 220  
 Gly Glu Val Asp Met Ala Leu Ala Gly Gly Val Thr Val Met Ser Thr  
 225 230 235 240  
 Pro Ser Thr Phe Val Glu Phe Ser Arg Gln Arg Gly Leu Ala Pro Asp  
 10 245 250 255  
 Gly Arg Ser Lys Ser Phe Ser Ser Thr Ala Asp Gly Thr Ser Trp Ser  
 260 265 270  
 Glu Gly Val Gly Val Leu Leu Val Glu Arg Leu Ser Asp Ala Arg Arg  
 275 280 285  
 15 Lys Gly His Arg Ile Leu Ala Val Val Arg Gly Thr Ala Val Asn Gln  
 290 295 300  
 Asp Gly Ala Ser Ser Gly Leu Thr Ala Pro Asn Gly Pro Ser Gln Gln  
 305 310 315 320  
 Arg Val Ile Arg Arg Ala Leu Ala Asp Ala Arg Leu Thr Thr Ser Asp  
 20 325 330 335  
 Val Asp Val Val Glu Ala His Gly Thr Gly Thr Arg Leu Gly Asp Pro  
 340 345 350  
 Ile Glu Ala Gln Ala Val Ile Ala Thr Tyr Gly Gln Gly Arg Asp Gly  
 355 360 365  
 25 Glu Gln Pro Leu Arg Leu Gly Ser Leu Lys Ser Asn Ile Gly His Thr  
 370 375 380  
 Gln Ala Ala Ala Gly Val Ser Gly Val Ile Lys Met Val Gln Ala Met  
 385 390 395 400  
 Arg His Gly Val Leu Pro Lys Thr Leu His Val Glu Lys Pro Thr Asp  
 30 405 410 415  
 Gln Val Asp Trp Ser Ala Gly Ala Val Glu Leu Leu Thr Glu Ala Met  
 420 425 430  
 Asp Trp Pro Asp Lys Gly Asp Gly Gly Leu Arg Arg Ala Ala Val Ser  
 435 440 445  
 35 Ser Phe Gly Val Ser Gly Thr Asn Ala His Val Val Leu Glu Glu Ala  
 450 455 460  
 Pro Ala Ala Glu Glu Thr Pro Ala Ser Glu Ala Thr Pro Ala Val Glu  
 465 470 475 480  
 Pro Ser Val Gly Ala Gly Leu Val Pro Trp Leu Val Ser Ala Lys Thr  
 40 485 490 495

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	Pro	Ala	Ala	Leu	Asp	Ala	Gln	Ile	Gly	Arg	Leu	Ala	Ala	Phe	Ala	Ser
				500					505					510		
	Gln	Gly	Arg	Thr	Asp	Ala	Ala	Asp	Pro	Gly	Ala	Val	Ala	Arg	Val	Leu
			515					520					525			
5	Ala	Gly	Gly	Arg	Ala	Glu	Phe	Glu	His	Arg	Ala	Val	Val	Leu	Gly	Thr
		530					535					540				
	Gly	Gln	Asp	Asp	Phe	Ala	Gln	Ala	Leu	Thr	Ala	Pro	Glu	Gly	Leu	Ile
	545					550					555					560
	Arg	Gly	Thr	Pro	Ser	Asp	Val	Gly	Arg	Val	Ala	Phe	Val	Phe	Pro	Gly
10				565					570					575		
	Gln	Gly	Thr	Gln	Trp	Ala	Gly	Met	Gly	Ala	Glu	Leu	Leu	Asp	Val	Ser
			580					585					590			
	Lys	Glu	Phe	Ala	Ala	Ala	Met	Ala	Glu	Cys	Glu	Ser	Ala	Leu	Ser	Arg
		595					600					605				
15	Tyr	Val	Asp	Trp	Ser	Leu	Glu	Ala	Val	Val	Arg	Gln	Ala	Pro	Gly	Ala
		610					615				620					
	Pro	Thr	Leu	Glu	Arg	Val	Asp	Val	Val	Gln	Pro	Val	Thr	Phe	Ala	Val
	625					630				635						640
	Met	Val	Ser	Leu	Ala	Lys	Val	Trp	Gln	His	His	Gly	Val	Thr	Pro	Gln
20				645					650					655		
	Ala	Val	Val	Gly	His	Ser	Gln	Gly	Glu	Ile	Ala	Ala	Ala	Tyr	Val	Ala
			660					665				670				
	Gly	Ala	Leu	Thr	Leu	Asp	Asp	Ala	Ala	Arg	Val	Val	Thr	Leu	Arg	Ser
		675					680					685				
25	Lys	Ser	Ile	Ala	Ala	His	Leu	Ala	Gly	Lys	Gly	Gly	Met	Ile	Ser	Leu
		690					695				700					
	Ala	Leu	Ser	Glu	Glu	Ala	Thr	Arg	Gln	Arg	Ile	Glu	Asn	Leu	His	Gly
	705					710				715						720
	Leu	Ser	Ile	Ala	Ala	Val	Asn	Gly	Pro	Thr	Ala	Thr	Val	Val	Ser	Gly
30				725					730					735		
	Asp	Pro	Thr	Gln	Ile	Gln	Glu	Leu	Ala	Gln	Ala	Cys	Glu	Ala	Asp	Gly
			740					745				750				
	Val	Arg	Ala	Arg	Ile	Ile	Pro	Val	Asp	Tyr	Ala	Ser	His	Ser	Ala	His
		755					760					765				
35	Val	Glu	Thr	Ile	Glu	Ser	Glu	Leu	Ala	Glu	Val	Leu	Ala	Gly	Leu	Ser
		770					775				780					
	Pro	Arg	Thr	Pro	Glu	Val	Pro	Phe	Phe	Ser	Thr	Leu	Glu	Gly	Ala	Trp
	785					790				795						800
	Ile	Thr	Glu	Pro	Val	Leu	Asp	Gly	Thr	Tyr	Trp	Tyr	Arg	Asn	Leu	Arg
40				805					810					815		

His Arg Val Gly Phe Ala Pro Ala Val Glu Thr Leu Ala Thr Asp Glu  
                   820                                  825                                  830  
 Gly Phe Thr His Phe Ile Glu Val Ser Ala His Pro Val Leu Thr Met  
                   835                                  840                                  845  
 5 Thr Leu Pro Glu Thr Val Thr Gly Leu Gly Thr Leu Arg Arg Glu Gln  
                   850                                  855                                  860  
 Gly Gly Gln Glu Arg Leu Val Thr Ser Leu Ala Glu Ala Trp Thr Asn  
                   865                                  870                                  875                                  880  
 Gly Leu Thr Ile Asp Trp Ala Pro Val Leu Pro Thr Ala Thr Gly His  
 10                                  885                                  890                                  895  
 His Pro Glu Leu Pro Thr Tyr Ala Phe Gln Arg Arg His Tyr Trp Leu  
                   900                                  905                                  910  
 His Asp Ser Pro Ala Val Gln Gly Ser Val Gln Asp Ser Trp Arg Tyr  
                   915                                  920                                  925  
 15 Arg Ile Asp Trp Lys Arg Leu Ala Val Ala Asp Ala Ser Glu Arg Ala  
                   930                                  935                                  940  
 Gly Leu Ser Gly Arg Trp Leu Val Val Val Pro Glu Asp Arg Ser Ala  
                   945                                  950                                  955                                  960  
 Glu Ala Ala Pro Val Leu Ala Ala Leu Ser Gly Ala Gly Ala Asp Pro  
 20                                  965                                  970                                  975  
 Val Gln Leu Asp Val Ser Pro Leu Gly Asp Arg Gln Arg Leu Ala Ala  
                   980                                  985                                  990  
 Thr Leu Gly Glu Ala Leu Ala Ala Ala Gly Gly Ala Val Asp Gly Val  
                   995                                  1000                                  1005  
 25 Leu Ser Leu Leu Ala Trp Asp Glu Ser Ala His Pro Gly His Pro Ala  
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 Pro Phe Thr Arg Gly Thr Gly Ala Thr Leu Thr Leu Val Gln Ala Leu  
                   1025                                  1030                                  1035                                  1040  
 Glu Asp Ala Gly Val Ala Ala Pro Leu Trp Cys Val Thr His Gly Ala  
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 Val Ser Val Gly Arg Ala Asp His Val Thr Ser Pro Ala Gln Ala Met  
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                   1075                                  1080                                  1085  
 35 Gly Gly Leu Ile Asp Leu Pro Ser Asp Ala Asp Arg Ala Ala Leu Asp  
                   1090                                  1095                                  1100  
 Arg Met Thr Thr Val Leu Ala Gly Gly Thr Gly Glu Asp Gln Val Ala  
                   1105                                  1110                                  1115                                  1120  
 Val Arg Ala Ser Gly Leu Leu Ala Arg Arg Leu Val Arg Ala Ser Leu  
 40                                  1125                                  1130                                  1135

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Pro Ala His Gly Thr Ala Ser Pro Trp Trp Gln Ala Asp Gly Thr Val  
 1140 1145 1150  
 Leu Val Thr Gly Ala Glu Glu Pro Ala Ala Ala Glu Ala Ala Arg Arg  
 1155 1160 1165  
 5 Leu Ala Arg Asp Gly Ala Gly His Leu Leu Leu His Thr Thr Pro Ser  
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 Leu Ala Gly Leu Val Ala Glu Leu Ala Asp Leu Gly Ala Thr Ala Thr  
 10 1205 1210 1215  
 Val Val Thr Cys Asp Leu Thr Asp Ala Glu Ala Ala Ala Arg Leu Leu  
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 Ala Gly Val Ser Asp Ala His Pro Leu Ser Ala Val Leu His Leu Pro  
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 15 Pro Thr Val Asp Ser Glu Pro Leu Ala Ala Thr Asp Ala Asp Ala Leu  
 1250 1255 1260  
 Ala Arg Val Val Thr Ala Lys Ala Thr Ala Ala Leu His Leu Asp Arg  
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 Leu Leu Arg Glu Ala Ala Ala Ala Gly Gly Arg Pro Pro Val Leu Val  
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 25 Ala Asp Gly Pro Thr Val Thr Ser Val Ala Trp Ser Pro Trp Glu Gly  
 1330 1335 1340  
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 30 1365 1370 1375  
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 1410 1415 1420  
 Ala Ala Asp Asp Thr Val Leu Ser Arg Glu Leu Gly Ala Leu Thr Gly  
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 Ala Glu Gln Gln Arg Arg Met Gln Glu Leu Val Arg Glu His Leu Ala  
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Val Val Leu Asn His Pro Ser Pro Glu Ala Val Asp Thr Gly Arg Ala  
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 Phe Arg Asp Leu Gly Phe Asp Ser Leu Thr Ala Val Glu Leu Arg Asn  
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 5 Arg Leu Lys Asn Ala Thr Gly Leu Ala Leu Pro Ala Thr Leu Val Phe  
 1490 1495 1500  
 Asp Tyr Pro Thr Pro Arg Thr Leu Ala Glu Phe Leu Leu Ala Glu Ile  
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 Leu Gly Glu Gln Ala Gly Ala Gly Glu Gln Leu Pro Val Asp Gly Gly  
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 Val Asp Asp Glu Pro Val Ala Ile Val Gly Met Ala Cys Arg Leu Pro  
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 Gly Gly Val Ala Ser Pro Glu Asp Leu Trp Arg Leu Val Ala Gly Gly  
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 15 Glu Asp Ala Ile Ser Gly Phe Pro Gln Asp Arg Gly Trp Asp Val Glu  
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 Gly Leu Tyr Asp Pro Asp Pro Asp Ala Ser Gly Arg Thr Tyr Cys Arg  
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 25 Thr Ser Leu Gln Gly Gln Gln Val Gly Val Phe Ala Gly Thr Asn Gly  
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 Pro His Tyr Glu Pro Leu Leu Arg Asn Thr Ala Glu Asp Leu Glu Gly  
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 30 1685 1690 1695  
 Tyr Thr Leu Gly Leu Glu Gly Pro Ala Val Thr Val Asp Thr Ala Cys  
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 Ser Ser Ser Leu Val Ala Leu His Leu Ala Val Gln Ala Leu Arg Lys  
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 1730 1735 1740  
 Pro Thr Thr Phe Val Glu Phe Ser Arg Gln Arg Gly Leu Ala Glu Asp  
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 Gly Arg Ser Lys Ala Phe Ala Ala Ser Ala Asp Gly Phe Gly Pro Ala  
 40 1765 1770 1775

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Glu Gly Val Gly Met Leu Leu Val Glu Arg Leu Ser Asp Ala Arg Arg  
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 Asn Gly His Arg Val Leu Ala Val Val Arg Gly Ser Ala Val Asn Gln  
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 5 Asp Gly Ala Ser Asn Gly Leu Thr Ala Pro Asn Gly Pro Ser Gln Gln  
 1810 1815 1820  
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 1825 1830 1835 1840  
 Val Asp Val Val Glu Ala His Gly Thr Gly Thr Arg Leu Gly Asp Pro  
 10 1845 1850 1855  
 Ile Glu Ala Gln Ala Leu Ile Ala Thr Tyr Gly Gln Gly Arg Asp Thr  
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 Glu Gln Pro Leu Arg Leu Gly Ser Leu Lys Ser Asn Ile Gly His Thr  
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 15 Gln Ala Ala Ala Gly Val Ser Gly Ile Ile Lys Met Val Gln Ala Met  
 1890 1895 1900  
 Arg His Gly Val Leu Pro Lys Thr Leu His Val Asp Arg Pro Ser Asp  
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 Gln Ile Asp Trp Ser Ala Gly Thr Val Glu Leu Leu Thr Glu Ala Met  
 20 1925 1930 1935  
 Asp Trp Pro Arg Lys Gln Glu Gly Gly Leu Arg Arg Ala Ala Val Ser  
 1940 1945 1950  
 Ser Phe Gly Ile Ser Gly Thr Asn Ala His Ile Val Leu Glu Glu Ala  
 1955 1960 1965  
 25 Pro Val Asp Glu Asp Ala Pro Ala Asp Glu Pro Ser Val Gly Gly Val  
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 Val Pro Trp Leu Val Ser Ala Lys Thr Pro Ala Ala Leu Asp Ala Gln  
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 Ile Gly Arg Leu Ala Ala Phe Ala Ser Gln Gly Arg Thr Asp Ala Ala  
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 Gly Arg Val Ala Phe Val Phe Pro Gly Gln Gly Thr Gln Trp Ala Gly  
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 Met Gly Ala Glu Leu Leu Asp Val Ser Lys Glu Phe Ala Ala Ala Met  
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Ala Glu Cys Glu Ala Ala Leu Ala Pro Tyr Val Asp Trp Ser Leu Glu  
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 2195 2200 2205  
 15 Val Glu Arg Leu Ala Gly Phe Asp Gly Leu Ser Val Ala Ala Val Asn  
 2210 2215 2220  
 Gly Pro Thr Ala Thr Val Val Ser Gly Asp Pro Thr Gln Ile Gln Glu  
 2225 2230 2235 2240  
 Leu Ala Gln Ala Cys Glu Ala Asp Gly Val Arg Ala Arg Ile Ile Pro  
 20 2245 2250 2255  
 Val Asp Tyr Ala Ser His Ser Ala His Val Glu Thr Ile Glu Ser Glu  
 2260 2265 2270  
 Leu Ala Asp Val Leu Ala Gly Leu Ser Pro Gln Thr Pro Gln Val Pro  
 2275 2280 2285  
 25 Phe Phe Ser Thr Leu Glu Gly Ala Trp Ile Thr Glu Pro Ala Leu Asp  
 2290 2295 2300  
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 2305 2310 2315 2320  
 Ala Val Glu Thr Leu Ala Thr Asp Glu Gly Phe Thr His Phe Val Glu  
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 Val Ser Ala His Pro Val Leu Thr Met Ala Leu Pro Glu Thr Val Thr  
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 Gly Leu Gly Thr Leu Arg Arg Asp Asn Gly Gly Gln His Arg Leu Thr  
 2355 2360 2365  
 35 Thr Ser Leu Ala Glu Ala Trp Ala Asn Gly Leu Thr Val Asp Trp Ala  
 2370 2375 2380  
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 Phe Gln Thr Glu Arg Tyr Trp Pro Gln Pro Asp Leu Ser Ala Ala Gly  
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Met Pro Glu Gly Trp Thr Phe Ala Gln Gly Ala Ser Val Pro Val Val  
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 Phe Leu Thr Ala Val Tyr Ala Leu Arg Asp Leu Ala Asp Val Lys Pro  
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 5 Gly Glu Arg Leu Leu Val His Ser Ala Ala Gly Gly Val Gly Met Ala  
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 15 Glu Phe Val Asp Ala Ser Leu Arg Leu Leu Gly Pro Gly Gly Arg Phe  
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 20 3205 3210 3215  
 Pro Glu Arg Ile Gly Glu Met Leu Ala Glu Val Ile Ala Leu Phe Glu  
 3220 3225 3230  
 Asp Gly Val Leu Arg His Leu Pro Val Thr Thr Trp Asp Val Arg Arg  
 3235 3240 3245  
 25 Ala Arg Asp Ala Phe Arg His Val Ser Gln Ala Arg His Thr Gly Lys  
 3250 3255 3260  
 Val Val Leu Thr Met Pro Ser Gly Leu Asp Pro Glu Gly Thr Val Leu  
 3265 3270 3275 3280  
 Leu Thr Gly Gly Thr Gly Ala Leu Gly Gly Ile Val Ala Arg His Val  
 30 3285 3290 3295  
 Val Gly Glu Trp Gly Val Arg Arg Leu Leu Leu Val Ser Arg Arg Gly  
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 Thr Asp Ala Pro Gly Ala Gly Glu Leu Val His Glu Leu Glu Ala Leu  
 3315 3320 3325  
 35 Gly Ala Asp Val Ser Val Ala Ala Cys Asp Val Ala Asp Arg Glu Ala  
 3330 3335 3340  
 Leu Thr Ala Val Leu Asp Ser Ile Pro Ala Glu His Pro Leu Thr Ala  
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 Val Val His Thr Ala Gly Val Leu Ser Asp Gly Thr Leu Pro Ser Met  
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Thr Ala Glu Asp Val Glu His Val Leu Arg Pro Lys Val Asp Ala Ala  
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 Phe Leu Leu Asp Glu Leu Thr Ser Thr Pro Gly Tyr Asp Leu Ala Ala  
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 5 Phe Val Met Phe Ser Ser Ala Ala Ala Val Phe Gly Gly Ala Gly Gln  
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 10 3445 3450 3455  
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 3460 3465 3470  
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 3475 3480 3485  
 15 Ser Leu Leu Asp Ala Ala Met Arg Arg Asp Asp Pro Ala Leu Val Pro  
 3490 3495 3500  
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 Leu Ala Pro Leu Leu Ser Gly Leu Thr Arg Gly Ser Arg Val Gly Gly  
 20 3525 3530 3535  
 Ala Pro Val Asn Gln Arg Arg Ala Ala Ala Gly Gly Ala Gly Glu Ala  
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 Asp Thr Asp Leu Gly Gly Arg Leu Ala Ala Met Thr Pro Asp Asp Arg  
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 25 Val Ala His Leu Arg Asp Leu Val Arg Thr His Val Ala Thr Val Leu  
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 Gly His Gly Thr Pro Ser Arg Val Asp Leu Glu Arg Ala Phe Arg Asp  
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 Thr Gly Phe Asp Ser Leu Thr Ala Val Glu Leu Arg Asn Arg Leu Asn  
 30 3605 3610 3615  
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 Thr Pro Gly Glu Leu Ala Gly His Leu Leu Asp Glu Leu Ala Thr Ala  
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<212> DNA

<213> *Streptomyces venezuelae*

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<213> *Streptomyces venezuelae*

<400> 35

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 Asp Ala Ile Ser Glu Phe Pro Gln Asp Arg Gly Trp Asp Val Glu Gly  
 65 70 75 80  
 30 Leu Tyr Asp Pro Asp Pro Asp Ala Ser Gly Arg Thr Tyr Cys Arg Ser  
 85 90 95  
 Gly Gly Phe Leu His Asp Ala Gly Glu Phe Asp Ala Asp Phe Phe Gly  
 100 105 110  
 Ile Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln Arg Leu Ser  
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 Ala Leu Lys Gly Ser Gly Leu Gly Val Phe Val Gly Gly Trp His Thr  
 145 150 155 160  
 40 Gly Tyr Thr Ser Gly Gln Thr Thr Ala Val Gln Ser Pro Glu Leu Glu

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	Ala Tyr Val Leu Gly Thr Asp Gly Pro Ala Leu Thr Val Asp Thr Ala		
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	Cys Ser Ser Ser Leu Val Ala Leu His Leu Ala Val Gln Ala Leu Arg		
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	Lys Gly Glu Cys Asp Met Ala Leu Ala Gly Gly Val Thr Val Met Pro		
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	Asp Gly Arg Ser Lys Ala Phe Ala Thr Ser Ala Asp Gly Phe Gly Pro		
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	Ala Glu Gly Ala Gly Val Leu Leu Val Glu Arg Leu Ser Asp Ala Arg		
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	Arg Asn Gly His Arg Ile Leu Ala Val Val Arg Gly Ser Ala Val Asn		
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	Gln Asp Gly Ala Ser Asn Gly Leu Thr Ala Pro His Gly Pro Ser Gln		
	305	310	315
20	Gln Arg Val Ile Arg Arg Ala Leu Ala Asp Ala Arg Leu Ala Pro Gly		
	325	330	335
	Asp Val Asp Val Val Glu Ala His Gly Thr Gly Thr Arg Leu Gly Asp		
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	Pro Ile Glu Ala Gln Ala Leu Ile Ala Thr Tyr Gly Gln Glu Lys Ser		
25	355	360	365
	Ser Glu Gln Pro Leu Arg Leu Gly Ala Leu Lys Ser Asn Ile Gly His		
	370	375	380
	Thr Gln Ala Ala Ala Gly Val Ala Gly Val Ile Lys Met Val Gln Ala		
	385	390	395
30	Met Arg His Gly Leu Leu Pro Lys Thr Leu His Val Asp Glu Pro Ser		
	405	410	415
	Asp Gln Ile Asp Trp Ser Ala Gly Thr Val Glu Leu Leu Thr Glu Ala		
	420	425	430
	Val Asp Trp Pro Glu Lys Gln Asp Gly Gly Leu Arg Arg Ala Ala Val		
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	Ser Ser Phe Gly Ile Ser Gly Thr Asn Ala His Val Val Leu Glu Glu		
	450	455	460
	Ala Pro Ala Val Glu Asp Ser Pro Ala Val Glu Pro Pro Ala Gly Gly		
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40	Gly Val Val Pro Trp Pro Val Ser Ala Lys Thr Pro Ala Ala Leu Asp		
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	Asp Pro Ala Val Ala Ala Arg Ala Leu Val Asp Ser Arg Thr Ala Met		
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	Glu His Arg Ala Val Ala Val Gly Asp Ser Arg Glu Ala Leu Arg Asp		
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	Ala Leu Arg Met Pro Glu Gly Leu Val Arg Gly Thr Ser Ser Asp Val		
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	565	570	575
	Met Gly Ala Glu Leu Leu Asp Ser Ser Pro Glu Phe Ala Ala Ser Met		
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	Ala Glu Cys Glu Thr Ala Leu Ser Arg Tyr Val Asp Trp Ser Leu Glu		
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	Ala Val Val Arg Gln Glu Pro Gly Ala Pro Thr Leu Asp Arg Val Asp		
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	Val Val Gln Pro Val Thr Phe Ala Val Met Val Ser Leu Ala Lys Val		
	625	630	635
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	Gly Glu Ile Ala Ala Ala Tyr Val Ala Gly Ala Leu Thr Leu Asp Asp		
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	Ala Ala Arg Val Val Thr Leu Arg Ser Lys Ser Ile Ala Ala His Leu		
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	Ala Gly Lys Gly Gly Met Ile Ser Leu Ala Leu Asp Glu Ala Ala Val		
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	Leu Lys Arg Leu Ser Asp Phe Asp Gly Leu Ser Val Ala Ala Val Asn		
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	Leu Ala Arg Thr Cys Glu Ala Asp Gly Val Arg Ala Arg Ile Ile Pro		
	740	745	750
	Val Asp Tyr Ala Ser His Ser Arg Gln Val Glu Ile Ile Glu Lys Glu		
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	Leu Gly Thr Leu Arg Arg Glu Gln Gly Gly Gln Glu Arg Leu Val Thr		
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	Ser Leu Ala Glu Ala Trp Ala Asn Gly Leu Thr Ile Asp Trp Ala Pro		
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	Ala Asp Asp Trp Arg Tyr Arg Val Glu Trp Lys Pro Leu Thr Ala Ser		
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	Gly Gln Ala Asp Leu Ser Gly Arg Trp Ile Val Ala Val Gly Ser Glu		
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	Arg Leu Thr Ala Leu Thr Thr Gly Asp Gly Phe Thr Gly Val Val Ser		
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	Leu Leu Asp Asp Leu Val Pro Gln Val Ala Trp Val Gln Ala Leu Gly		
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	Asp Ala Gly Ile Lys Ala Pro Leu Trp Ser Val Thr Gln Gly Ala Val		
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	Ser Val Gly Arg Leu Asp Thr Pro Ala Asp Pro Asp Arg Ala Met Leu		
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	Gly Leu Val Asp Leu Pro Ala Gln Pro Asp Ala Ala Ala Leu Ala His		
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	Leu Asp Asp Leu Leu Arg Gly Thr Pro Leu Asp Ala Phe Val Leu Tyr		
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 Trp Glu Gly Arg Val Arg Arg Ala Leu Ala Glu Leu Pro Leu Asp Arg  
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<212> DNA

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<210> 37

<211> 1346

<212> PRT

15 <213> *Streptomyces venezuelae*

<400> 37

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 Arg Gln Glu Pro Met Ala Ile Val Gly Met Ser Cys Arg Phe Ala Gly  
 35 40 45  
 Gly Ile Arg Ser Pro Glu Asp Leu Trp Asp Ala Val Ala Ala Gly Lys  
 25 50 55 60  
 Asp Leu Val Ser Glu Val Pro Glu Glu Arg Gly Trp Asp Ile Asp Ser  
 65 70 75 80  
 Leu Tyr Asp Pro Val Pro Gly Arg Lys Gly Thr Thr Tyr Val Arg Asn  
 85 90 95  
 30 Ala Ala Phe Leu Asp Asp Ala Ala Gly Phe Asp Ala Ala Phe Phe Gly  
 100 105 110  
 Ile Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln Arg Gln Leu  
 115 120 125  
 Leu Glu Ala Ser Trp Glu Val Phe Glu Arg Ala Gly Ile Asp Pro Ala  
 35 130 135 140  
 Ser Val Arg Gly Thr Asp Val Gly Val Tyr Val Gly Cys Gly Tyr Gln  
 145 150 155 160  
 Asp Tyr Ala Pro Asp Ile Arg Val Ala Pro Glu Gly Thr Gly Gly Tyr  
 165 170 175  
 40 Val Val Thr Gly Asn Ser Ser Ala Val Ala Ser Gly Arg Ile Ala Tyr

098384-1901

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	Ser Ser Leu Val Ala Leu His Leu Ala Leu Lys Gly Leu Arg Asn Gly		
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	Asp Cys Ser Thr Ala Leu Val Gly Gly Val Ala Val Leu Ala Thr Pro		
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	Gly Ala Phe Ile Glu Phe Ser Ser Gln Gln Ala Met Ala Ala Asp Gly		
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10	Arg Thr Lys Gly Phe Ala Ser Ala Ala Asp Gly Leu Ala Trp Gly Glu		
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	Gly Val Ala Val Leu Leu Leu Glu Arg Leu Ser Asp Ala Arg Arg Lys		
	275	280	285
	Gly His Arg Val Leu Ala Val Val Arg Gly Ser Ala Ile Asn Gln Asp		
15	290	295	300
	Gly Ala Ser Asn Gly Leu Thr Ala Pro His Gly Pro Ser Gln Gln His		
	305	310	315 320
	Leu Ile Arg Gln Ala Leu Ala Asp Ala Arg Leu Thr Ser Ser Asp Val		
	325	330	335
20	Asp Val Val Glu Gly His Gly Thr Gly Thr Arg Leu Gly Asp Pro Ile		
	340	345	350
	Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly Gln Gly Arg Ala Pro Gly		
	355	360	365
	Gln Pro Leu Arg Leu Gly Thr Leu Lys Ser Asn Ile Gly His Thr Gln		
25	370	375	380
	Ala Ala Ser Gly Val Ala Gly Val Ile Lys Met Val Gln Ala Leu Arg		
	385	390	395 400
	His Gly Val Leu Pro Lys Thr Leu His Val Asp Glu Pro Thr Asp Gln		
	405	410	415
30	Val Asp Trp Ser Ala Gly Ser Val Glu Leu Leu Thr Glu Ala Val Asp		
	420	425	430
	Trp Pro Glu Arg Pro Gly Arg Leu Arg Arg Ala Gly Val Ser Ala Phe		
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	Gly Val Gly Gly Thr Asn Ala His Val Val Leu Glu Glu Ala Pro Ala		
35	450	455	460
	Val Glu Glu Ser Pro Ala Val Glu Pro Pro Ala Gly Gly Gly Val Val		
	465	470	475 480
	Pro Trp Pro Val Ser Ala Lys Thr Ser Ala Ala Leu Asp Ala Gln Ile		
	485	490	495
40	Gly Gln Leu Ala Ala Tyr Ala Glu Asp Arg Thr Asp Val Asp Pro Ala		

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	Val Ala Ala Arg Ala Leu Val Asp Ser Arg Thr Ala Met Glu His Arg		
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	Ala Val Ala Val Gly Asp Ser Arg Glu Ala Leu Arg Asp Ala Leu Arg		
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	Met Pro Glu Gly Leu Val Arg Gly Thr Val Thr Asp Pro Gly Arg Val		
	545	550	555
	Ala Phe Val Phe Pro Gly Gln Gly Thr Gln Trp Ala Gly Met Gly Ala		
	565	570	575
10	Glu Leu Leu Asp Ser Ser Pro Glu Phe Ala Ala Ala Met Ala Glu Cys		
	580	585	590
	Glu Thr Ala Leu Ser Pro Tyr Val Asp Trp Ser Leu Glu Ala Val Val		
	595	600	605
	Arg Gln Ala Pro Ser Ala Pro Thr Leu Asp Arg Val Asp Val Val Gln		
15	610	615	620
	Pro Val Thr Phe Ala Val Met Val Ser Leu Ala Lys Val Trp Gln His		
	625	630	635
	His Gly Ile Thr Pro Glu Ala Val Ile Gly His Ser Gln Gly Glu Ile		
	645	650	655
20	Ala Ala Ala Tyr Val Ala Gly Ala Leu Thr Leu Asp Asp Ala Ala Arg		
	660	665	670
	Val Val Thr Leu Arg Ser Lys Ser Ile Ala Ala His Leu Ala Gly Lys		
	675	680	685
	Gly Gly Met Ile Ser Leu Ala Leu Ser Glu Glu Ala Thr Arg Gln Arg		
25	690	695	700
	Ile Glu Asn Leu His Gly Leu Ser Ile Ala Ala Val Asn Gly Pro Thr		
	705	710	715
	Ala Thr Val Val Ser Gly Asp Pro Thr Gln Ile Gln Glu Leu Ala Gln		
	725	730	735
30	Ala Cys Glu Ala Asp Gly Ile Arg Ala Arg Ile Ile Pro Val Asp Tyr		
	740	745	750
	Ala Ser His Ser Ala His Val Glu Thr Ile Glu Asn Glu Leu Ala Asp		
	755	760	765
	Val Leu Ala Gly Leu Ser Pro Gln Thr Pro Gln Val Pro Phe Phe Ser		
35	770	775	780
	Thr Leu Glu Gly Thr Trp Ile Thr Glu Pro Ala Leu Asp Gly Gly Tyr		
	785	790	795
	Trp Tyr Arg Asn Leu Arg His Arg Val Gly Phe Ala Pro Ala Val Glu		
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40	Thr Leu Ala Thr Asp Glu Gly Phe Thr His Phe Ile Glu Val Ser Ala		

09988384-11901

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	His Pro Val Leu Thr Met Thr Leu Pro Asp Lys Val Thr Gly Leu Ala				
	835		840		845
	Thr Leu Arg Arg Glu Asp Gly Gly Gln His Arg Leu Thr Thr Ser Leu				
5	850		855		860
	Ala Glu Ala Trp Ala Asn Gly Leu Ala Leu Asp Trp Ala Ser Leu Leu				
	865		870		875
	Pro Ala Thr Gly Ala Leu Ser Pro Ala Val Pro Asp Leu Pro Thr Tyr				
	885		890		895
10	Ala Phe Gln His Arg Ser Tyr Trp Ile Ser Pro Ala Gly Pro Gly Glu				
	900		905		910
	Ala Pro Ala His Thr Ala Ser Gly Arg Glu Ala Val Ala Glu Thr Gly				
	915		920		925
	Leu Ala Trp Gly Pro Gly Ala Glu Asp Leu Asp Glu Glu Gly Arg Arg				
15	930		935		940
	Ser Ala Val Leu Ala Met Val Met Arg Gln Ala Ala Ser Val Leu Arg				
	945		950		955
	Cys Asp Ser Pro Glu Glu Val Pro Val Asp Arg Pro Leu Arg Glu Ile				
	965		970		975
20	Gly Phe Asp Ser Leu Thr Ala Val Asp Phe Arg Asn Arg Val Asn Arg				
	980		985		990
	Leu Thr Gly Leu Gln Leu Pro Pro Thr Val Val Phe Gln His Pro Thr				
	995		1000		1005
	Pro Val Ala Leu Ala Glu Arg Ile Ser Asp Glu Leu Ala Glu Arg Asn				
25	1010		1015		1020
	Trp Ala Val Ala Glu Pro Ser Asp His Glu Gln Ala Glu Glu Glu Lys				
	1025		1030		1035
	Ala Ala Ala Pro Ala Gly Ala Arg Ser Gly Ala Asp Thr Gly Ala Gly				
	1045		1050		1055
30	Ala Gly Met Phe Arg Ala Leu Phe Arg Gln Ala Val Glu Asp Asp Arg				
	1060		1065		1070
	Tyr Gly Glu Phe Leu Asp Val Leu Ala Glu Ala Ser Ala Phe Arg Pro				
	1075		1080		1085
	Gln Phe Ala Ser Pro Glu Ala Cys Ser Glu Arg Leu Asp Pro Val Leu				
35	1090		1095		1100
	Leu Ala Gly Gly Pro Thr Asp Arg Ala Glu Gly Arg Ala Val Leu Val				
	1105		1110		1115
	Gly Cys Thr Gly Thr Ala Ala Asn Gly Gly Pro His Glu Phe Leu Arg				
	1125		1130		1135
40	Leu Ser Thr Ser Phe Gln Glu Glu Arg Asp Phe Leu Ala Val Pro Leu				

09063384-11901

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 Asp Leu Asp Thr Ala Leu Asp Ala Gln Ala Arg Ala Ile Leu Arg Ala  
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 Ala Gly Asp Ala Pro Val Val Leu Leu Gly His Ser Gly Gly Ala Leu  
 1185 1190 1195 1200  
 Leu Ala His Glu Leu Ala Phe Arg Leu Glu Arg Ala His Gly Ala Pro  
 1205 1210 1215  
 10 Pro Ala Gly Ile Val Leu Val Asp Pro Tyr Pro Pro Gly His Gln Glu  
 1220 1225 1230  
 Pro Ile Glu Val Trp Ser Arg Gln Leu Gly Glu Gly Leu Phe Ala Gly  
 1235 1240 1245  
 Glu Leu Glu Pro Met Ser Asp Ala Arg Leu Leu Ala Met Gly Arg Tyr  
 15 1250 1255 1260  
 Ala Arg Phe Leu Ala Gly Pro Arg Pro Gly Arg Ser Ser Ala Pro Val  
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 Leu Leu Val Arg Ala Ser Glu Pro Leu Gly Asp Trp Gln Glu Glu Arg  
 1285 1290 1295  
 20 Gly Asp Trp Arg Ala His Trp Asp Leu Pro His Thr Val Ala Asp Val  
 1300 1305 1310  
 Pro Gly Asp His Phe Thr Met Met Arg Asp His Ala Pro Ala Val Ala  
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 Gly Lys  
 1345

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 <212> DNA  
 <213> *Streptomyces venezuelae*

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 gcccaccggg tgcgcacccc cgagggggac gaggtgtggc tggctgctcg ctacgaccgg 180  
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<210> 39

<211> 416

<212> PRT

20 <213> *Streptomyces venezuelae*

<400> 39

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 35 40 45  
 Gly Asp Glu Val Trp Leu Val Val Gly Tyr Asp Arg Ala Arg Ala Val  
 30 50 55 60  
 Leu Ala Asp Pro Arg Phe Ser Lys Asp Trp Arg Asn Ser Thr Thr Pro  
 65 70 75 80  
 Leu Thr Glu Ala Glu Ala Ala Leu Asn His Asn Met Leu Glu Ser Asp  
 85 90 95  
 35 Pro Pro Arg His Thr Arg Leu Arg Lys Leu Val Ala Arg Glu Phe Thr  
 100 105 110  
 Met Arg Arg Val Glu Leu Leu Arg Pro Arg Val Gln Glu Ile Val Asp  
 115 120 125  
 Gly Leu Val Asp Ala Met Leu Ala Ala Pro Asp Gly Arg Ala Asp Leu  
 40 130 135 140

0998384-1190

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 Leu Gly Val Pro Glu Pro Asp Arg Ala Ala Phe Arg Val Trp Thr Asp  
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 5 Ala Phe Val Phe Pro Asp Asp Pro Ala Gln Ala Gln Thr Ala Met Ala  
 180 185 190  
 Glu Met Ser Gly Tyr Leu Ser Arg Leu Ile Asp Ser Lys Arg Gly Gln  
 195 200 205  
 Asp Gly Glu Asp Leu Leu Ser Ala Leu Val Arg Thr Ser Asp Glu Asp  
 10 210 215 220  
 Gly Ser Arg Leu Thr Ser Glu Glu Leu Leu Gly Met Ala His Ile Leu  
 225 230 235 240  
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 245 250 255  
 15 Tyr Ala Leu Leu Ser His Pro Asp Gln Leu Ala Ala Leu Arg Ala Asp  
 260 265 270  
 Met Thr Leu Leu Asp Gly Ala Val Glu Glu Met Leu Arg Tyr Glu Gly  
 275 280 285  
 Pro Val Glu Ser Ala Thr Tyr Arg Phe Pro Val Glu Pro Val Asp Leu  
 20 290 295 300  
 Asp Gly Thr Val Ile Pro Ala Gly Asp Thr Val Leu Val Val Leu Ala  
 305 310 315 320  
 Asp Ala His Arg Thr Pro Glu Arg Phe Pro Asp Pro His Arg Phe Asp  
 325 330 335  
 25 Ile Arg Arg Asp Thr Ala Gly His Leu Ala Phe Gly His Gly Ile His  
 340 345 350  
 Phe Cys Ile Gly Ala Pro Leu Ala Arg Leu Glu Ala Arg Ile Ala Val  
 355 360 365  
 Arg Ala Leu Leu Glu Arg Cys Pro Asp Leu Ala Leu Asp Val Ser Pro  
 30 370 375 380  
 Gly Glu Leu Val Trp Tyr Pro Asn Pro Met Ile Arg Gly Leu Lys Ala  
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 Leu Pro Ile Arg Trp Arg Arg Gly Arg Glu Ala Gly Arg Arg Thr Gly  
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35

&lt;210&gt; 40

&lt;211&gt; 2787

&lt;212&gt; DNA

&lt;213&gt; Streptomyces venezuelae

40

09083384-11901



&lt;400&gt; 40

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	ctgggcgagt	tcatgctctg	cggggagatc	ctgggcagct	ggaacctcga	ccagccctcg	2160
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10 <210> 41  
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 <213> Streptomyces venezuelae

15 <400> 41  
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 35 40 45  
 Ala Ala Glu Arg Glu Thr Pro Val Trp Ser Val Arg Ala Leu Pro Gly  
 50 55 60  
 Asp Arg Asp Ile Pro Leu Gly Val Leu Cys Gln Leu Leu Arg Ser Ala  
 25 65 70 75 80  
 Glu Gln His Gly Ala Asp Thr Ser Ala Val Arg Asp Leu Leu Asp Ala  
 85 90 95  
 Ala Ser Arg Arg Ala Gly Asn Leu Thr Ser Pro Ala Asp Ala Pro Leu  
 100 105 110  
 30 Arg Val Asp Glu Thr His Arg Leu His Asp Trp Leu Leu Ser Val Ser  
 115 120 125  
 Arg Arg Thr Pro Phe Leu Val Ala Val Asp Asp Leu Thr His Ala Asp  
 130 135 140  
 Thr Ala Ser Leu Arg Phe Leu Leu Tyr Cys Ala Ala His His Asp Gln  
 35 145 150 155 160  
 Gly Gly Ile Gly Phe Val Met Thr Glu Arg Ala Ser Gln Arg Ala Gly  
 165 170 175  
 Tyr Arg Val Phe Arg Ala Glu Leu Leu Arg Gln Pro His Cys Arg Asn  
 180 185 190  
 40 Met Trp Leu Ser Gly Leu Pro Pro Ser Gly Val Arg Gln Leu Leu Ala

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	195		200		205
	His Tyr Tyr Gly Pro Glu Ala Ala Glu Arg Arg Ala Pro Ala Tyr His				
	210		215		220
	Ala Thr Thr Gly Gly Asn Pro Leu Leu Leu Arg Ala Leu Thr Gln Asp				
5	225		230		235
	Arg Gln Ala Ser His Thr Thr Leu Gly Ala Ala Gly Gly Asp Glu Pro				
		245		250	255
	Val His Gly Asp Ala Phe Ala Gln Ala Val Leu Asp Cys Leu His Arg				
		260		265	270
10	Ser Ala Glu Gly Thr Leu Glu Thr Ala Arg Trp Leu Ala Val Leu Glu				
		275		280	285
	Gln Ser Asp Pro Leu Leu Val Glu Arg Leu Thr Gly Thr Thr Ala Ala				
		290		295	300
	Ala Val Glu Arg His Ile Gln Glu Leu Ala Ala Ile Gly Leu Leu Asp				
15	305		310		315
	Glu Asp Gly Thr Leu Gly Gln Pro Ala Ile Arg Glu Ala Ala Leu Gln				
		325		330	335
	Asp Leu Pro Ala Gly Glu Arg Thr Glu Leu His Arg Arg Ala Ala Glu				
		340		345	350
20	Gln Leu His Arg Asp Gly Ala Asp Glu Asp Thr Val Ala Arg His Leu				
		355		360	365
	Leu Val Gly Gly Ala Pro Asp Ala Pro Trp Ala Leu Pro Leu Leu Glu				
		370		375	380
	Arg Gly Ala Gln Gln Ala Leu Phe Asp Asp Arg Leu Asp Asp Ala Phe				
25	385		390		395
	Arg Ile Leu Glu Phe Ala Val Arg Ser Ser Thr Asp Asn Thr Gln Leu				
		405		410	415
	Ala Arg Leu Ala Pro His Leu Val Ala Ala Ser Trp Arg Met Asn Pro				
		420		425	430
30	His Met Thr Thr Arg Ala Leu Ala Leu Phe Asp Arg Leu Leu Ser Gly				
		435		440	445
	Glu Leu Pro Pro Ser His Pro Val Met Ala Leu Ile Arg Cys Leu Val				
		450		455	460
	Trp Tyr Gly Arg Leu Pro Glu Ala Ala Asp Ala Leu Ser Arg Leu Arg				
35	465		470		475
	Pro Ser Ser Asp Asn Asp Ala Leu Glu Leu Ser Leu Thr Arg Met Trp				
		485		490	495
	Leu Ala Ala Leu Cys Pro Pro Leu Leu Glu Ser Leu Pro Ala Thr Pro				
		500		505	510
40	Glu Pro Glu Arg Gly Pro Val Pro Val Arg Leu Ala Pro Arg Thr Thr				

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	515	520	525
	Ala Leu Gln Ala Gln Ala Gly Val Phe Gln Arg Gly Pro Asp Asn Ala		
	530	535	540
	Ser Val Ala Gln Ala Glu Gln Ile Leu Gln Gly Cys Arg Leu Ser Glu		
5	545	550	555
	Glu Thr Tyr Glu Ala Leu Glu Thr Ala Leu Leu Val Leu Val His Ala		
	565	570	575
	Asp Arg Leu Asp Arg Ala Leu Phe Trp Ser Asp Ala Leu Leu Ala Glu		
	580	585	590
10	Ala Val Glu Arg Arg Ser Leu Gly Trp Glu Ala Val Phe Ala Ala Thr		
	595	600	605
	Arg Ala Met Ile Ala Ile Arg Cys Gly Asp Leu Pro Thr Ala Arg Glu		
	610	615	620
	Arg Ala Glu Leu Ala Leu Ser His Ala Ala Pro Glu Ser Trp Gly Leu		
15	625	630	635
	Ala Val Gly Met Pro Leu Ser Ala Leu Leu Leu Ala Cys Thr Glu Ala		
	645	650	655
	Gly Glu Tyr Glu Gln Ala Glu Arg Val Leu Arg Gln Pro Val Pro Asp		
	660	665	670
20	Ala Met Phe Asp Ser Arg His Gly Met Glu Tyr Met His Ala Arg Gly		
	675	680	685
	Arg Tyr Trp Leu Ala Thr Gly Arg Leu His Ala Ala Leu Gly Glu Phe		
	690	695	700
	Met Leu Cys Gly Glu Ile Leu Gly Ser Trp Asn Leu Asp Gln Pro Ser		
25	705	710	715
	Ile Val Pro Trp Arg Thr Ser Ala Ala Glu Val Tyr Leu Arg Leu Gly		
	725	730	735
	Asn Arg Gln Lys Ala Arg Ala Leu Ala Glu Ala Gln Leu Ala Leu Val		
	740	745	750
30	Arg Pro Gly Arg Ser Arg Thr Arg Gly Leu Thr Leu Arg Val Leu Ala		
	755	760	765
	Ala Ala Val Asp Gly Gln Gln Ala Glu Arg Leu His Ala Glu Ala Val		
	770	775	780
	Asp Met Leu His Asp Ser Gly Asp Arg Leu Glu His Ala Arg Ala Leu		
35	785	790	795
	Ala Gly Met Ser Arg His Gln Gln Ala Gln Gly Asp Asn Tyr Arg Ala		
	805	810	815
	Arg Met Thr Ala Arg Leu Ala Gly Asp Met Ala Trp Ala Cys Gly Ala		
	820	825	830
40	Tyr Pro Leu Ala Glu Glu Ile Val Pro Gly Arg Gly Gly Arg Arg Ala		

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835                      840                      845  
 Lys Ala Val Ser Thr Glu Leu Glu Leu Pro Gly Gly Pro Asp Val Gly  
 850                      855                      860  
 Leu Leu Ser Glu Ala Glu Arg Arg Val Ala Ala Leu Ala Ala Arg Gly  
 5 865                      870                      875                      880  
 Leu Thr Asn Arg Gln Ile Ala Arg Arg Leu Cys Val Thr Ala Ser Thr  
 885                      890                      895  
 Val Glu Gln His Leu Thr Arg Val Tyr Arg Lys Leu Asn Val Thr Arg  
 900                      905                      910  
 10 Arg Ala Asp Leu Pro Ile Ser Leu Ala Gln Asp Lys Ser Val Thr Ala  
 915                      920                      925

<210> 42

<211> 27

15 <212> DNA

<213> Streptomyces venezuelae

<400> 42

cccgaattcg ccgccgccat ggccgaa

27

20

<210> 43

<211> 35

<212> DNA

<213> Streptomyces venezuelae

25

<400> 43

gtgatgcatc ggctcggcga cggcccagtt ccgct

35

<210> 44

30 <211> 45

<212> DNA

<213> Streptomyces venezuelae

<400> 44

35 atgcatcacc accaccacca ctgagggggc gggcaagtga ccgac

45

<210> 45

<211> 33

<212> DNA

40 <213> Streptomyces venezuelae

09583384-11901

&lt;400&gt; 45

gggtctagag ctgcaccggc gggtcgtagc gga

33

&lt;210&gt; 46

5

&lt;211&gt; 27

&lt;212&gt; DNA

&lt;213&gt; Streptomyces venezuelae

&lt;400&gt; 46

10 gaattcatcg agggggcggg caagtga

27

&lt;210&gt; 47

&lt;211&gt; 31

&lt;212&gt; DNA

15

&lt;213&gt; Streptomyces venezuelae

&lt;400&gt; 47

atgcatcagg tcgtcgggtca ccgtgggttc t

31

20

&lt;210&gt; 48

&lt;211&gt; 30

&lt;212&gt; DNA

&lt;213&gt; Streptomyces venezuelae

25

&lt;400&gt; 48

ggatccgcgc cgggatgttc cgcgccctgt

30

&lt;210&gt; 49

&lt;211&gt; 31

30

&lt;212&gt; DNA

&lt;213&gt; Streptomyces venezuelae

&lt;400&gt; 49

aaaatgcatc agaggtctgt cggtcacttg c

31

35

&lt;210&gt; 50

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Streptomyces venezuelae

40

T05T1 19880606

&lt;400&gt; 50

aaaagatctt gatggtgcag gcgctgcgcc acggggtgct g

41

&lt;210&gt; 51

5 &lt;211&gt; 32

&lt;212&gt; DNA

&lt;213&gt; Streptomyces venezuelae

&lt;400&gt; 51

10 aaaagatctc caacgaacag ttggtggacg ct

32

&lt;210&gt; 52

&lt;211&gt; 846

&lt;212&gt; DNA

15 &lt;213&gt; Streptomyces venezuelae

&lt;400&gt; 52

	gtgaccgaca gacctctgaa cgtggacagc ggactgtgga tccggcgctt ccaccccgcg	60
	ccgaacagcg cgggtgcggct ggtctgcctg ccgcacgccc gcggctccgc cagctacttc	120
20	ttccgcttct cggaggagct gcacccctcc gtgcaggccc tgtcggtgca gtatccgggc	180
	cgccaggacc ggcgtgccga gccgtgtctg gagagcgtcg aggagctcgc cgagcatgtg	240
	gtcgcggcca ccgaaccctg gtggcaggag ggccggctgg ccttcttcgg gcacagcctc	300
	ggcgccctcg tcgccttcga gacggcccgc atcctggaac agcggcacgg ggtacggccc	360
	gagggcctgt acgtctccgg tcggcgcgcc ccgtcgctgg cgccggaccg gctcgtccac	420
25	cagctggacg accgggctgt cctggccgag atccggcggc tcagcggcac cgacgagcgg	480
	ttcctccagg acgacgagct gctgcggctg gtgctgcccg cgctgcgcag cgactacaag	540
	gcggcggaga cgtacctgca ccggccgtcc gccaaactca cctgcccggg gatggccctg	600
	gccggcgacc gtgaccgaa ggcggcgctg aacgaggtgg ccgagtggcg tcggcacacc	660
	agcgggcccgt tctgcctccg ggcgtactcc ggcgggccact tctacctcaa cgaccagtgg	720
30	cacgagatct gcaacgacat ctccgaccac ctgctcgtea ccgcggcgcc gcccgatgcc	780
	cgcgctgtgc agcccccgac cagccttata gaaggagcgg cgaagagatg gcagaaccca	840
	cggtga	846

&lt;210&gt; 53

35 &lt;211&gt; 281

&lt;212&gt; PRT

&lt;213&gt; Streptomyces venezuelae

&lt;400&gt; 53

40 Met Thr Asp Arg Pro Leu Asn Val Asp Ser Gly Leu Trp Ile Arg Arg

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1	5	10	15
Phe His Pro Ala Pro Asn Ser Ala Val Arg Leu Val Cys Leu Pro His			
20	25	30	
Ala Gly Gly Ser Ala Ser Tyr Phe Phe Arg Phe Ser Glu Glu Leu His			
5 35	40	45	
Pro Ser Val Glu Ala Leu Ser Val Gln Tyr Pro Gly Arg Gln Asp Arg			
50	55	60	
Arg Ala Glu Pro Cys Leu Glu Ser Val Glu Glu Leu Ala Glu His Val			
65	70	75	80
10 Val Ala Ala Thr Glu Pro Trp Trp Gln Glu Gly Arg Leu Ala Phe Phe			
85	90	95	
Gly His Ser Leu Gly Ala Ser Val Ala Phe Glu Thr Ala Arg Ile Leu			
100	105	110	
Glu Gln Arg His Gly Val Arg Pro Glu Gly Leu Tyr Val Ser Gly Arg			
15 115	120	125	
Arg Ala Pro Ser Leu Ala Pro Asp Arg Leu Val His Gln Leu Asp Asp			
130	135	140	
Arg Ala Phe Leu Ala Glu Ile Arg Arg Leu Ser Gly Thr Asp Glu Arg			
145	150	155	160
20 Phe Leu Gln Asp Asp Glu Leu Leu Arg Leu Val Leu Pro Ala Leu Arg			
165	170	175	
Ser Asp Tyr Lys Ala Ala Glu Thr Tyr Leu His Arg Pro Ser Ala Lys			
180	185	190	
Leu Thr Cys Pro Val Met Ala Leu Ala Gly Asp Arg Asp Pro Lys Ala			
25 195	200	205	
Pro Leu Asn Glu Val Ala Glu Trp Arg Arg His Thr Ser Gly Pro Phe			
210	215	220	
Cys Leu Arg Ala Tyr Ser Gly Gly His Phe Tyr Leu Asn Asp Gln Trp			
225	230	235	240
30 His Glu Ile Cys Asn Asp Ile Ser Asp His Leu Leu Val Thr Arg Gly			
245	250	255	
Ala Pro Asp Ala Arg Val Val Gln Pro Pro Thr Ser Leu Ile Glu Gly			
260	265	270	
Ala Ala Lys Arg Trp Gln Asn Pro Arg			
35 275	280		

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